



FRIDAY, OCTOBER 1.

Train Accidents in August.

The following accidents are included in our record for the month of August:

COLLISIONS.

REAR.

2d, night, freight on Union Pacific ran over misplaced switch and into freight on siding at Elkhorn, Neb. Both engines and 5 cars damaged.

4th, very early, passenger train on Baltimore & Ohio broke in two near Green Spring Run, W. Va., and rear section ran into forward one, damaging 2 cars and killing 2 tramps on platform of mail car.

4th, a. m., freight on Grand Trunk ran into ballast train standing on main track at Warwick, P. Q., wrecking engine and 5 cars, killing fireman and injuring engineer.

4th, p. m., passenger train on Pittsburgh & Western ran over misplaced switch and into freight on siding at Callery Junction, Pa., wrecking both engines and 3 cars, injuring an engineer and a passenger.

4th, p. m., passenger train on Delaware & Hudson ran into rear of coal train at Archbold, Pa., damaging engine and 3 cars. Fireman hurt.

5th, night, passenger train on Boston & Albany ran into local passenger train switching across main track in Boston yard, damaging 3 cars.

6th, a. m., freight on Birmingham Mineral ran into preceding freight near Birmingham, Ala. Engineer hurt.

6th, a. m., passenger train on Vermont Valley ran into flat car left on main track at Brattleboro, Vt., doing some damage. Trainman hurt.

7th, p. m., freight on Cincinnati, Hamilton & Dayton ran into preceding freight near Toledo, O., damaging 7 cars.

8th, a. m., freight on East Tennessee, Virginia & Georgia ran into preceding freight which had stopped at Seney, Ga., and sent back no signal.

9th, p. m., freight on New York, Lake Erie & Western broke in two near Stafford, N. Y., and rear section ran into forward one, wrecking 12 cars.

10th, night, passenger train on Delaware & Hudson Canal Co. road ran into rear of freight near Port Henry, N. Y., damaging several cars.

12th, p. m., freight on Buffalo, New York & Philadelphia ran into rear of switching freight in Rochester, N. Y., damaging 3 cars.

13th, a. m., passenger train on Rome, Watertown & Ogdensburg ran over misplaced switch and into freight on siding in Watertown, N. Y., damaging several cars and injuring a trainman.

14th, a. m., ballast train on Long Island road ran over misplaced switch and into freight on siding at Woodhaven, N. Y., wrecking 2 engines and 4 cars, killing a trainman and injuring 2 others.

15th, a. m., freight on Chicago, Burlington & Quincy broke in two near Holdridge, Neb., and rear section ran into forward one, wrecking 4 cars.

15th, a. m., passenger train on East Tennessee, Virginia & Georgia ran into rear of freight at Brunswick, Ga., damaging 2 cars.

17th, night, freight on Pennsylvania Railroad ran into preceding freight near Brinton, Pa., wrecking 10 cars.

18th, very early, freight on Central of New Jersey broke in two near White House, N. J., and rear section ran into forward one, wrecking several cars. An oil-tank car caught fire and 11 cars were burned up.

20th, a. m., freight on New York, New Haven & Hartford broke in two near Portland, Conn., and rear section ran into forward one, wrecking 3 cars.

21st, a. m., passenger train on Baltimore & Ohio ran into passenger train standing on the main track in Washington, damaging engine and several cars and injuring 7 passengers.

22d, night, passenger train on Indiana, Bloomington & Western ran into yard engine in Indianapolis, Ind., doing a little damage.

24th, a. m., freight on Michigan Central ran into rear of passenger train stopping at Battle Creek, Mich., damaging 5 cars and injuring 2 passengers.

24th, night, freight on Cincinnati, Hamilton & Dayton broke in two near Miamisburg, O., and rear section ran into forward one, wrecking 3 cars.

25th, night, freight on New York, Lake Erie & Western ran into preceding freight stopped at Greycourt, N. Y., damaging 7 cars.

25th, night, freight on Virginia Midland broke in two near South Rivanna, Va., and rear section ran into forward one, damaging 2 cars and killing brakeman who was thrown between the cars.

26th, very early, freight on Pennsylvania Railroad ran into preceding freight at Dean's Pond, N. J., damaging 3 cars.

26th, a. m., passenger train on Texas & Pacific ran into rear of freight just going into siding at Whitesboro, Tex., damaging 3 cars.

26th, a. m., excursion train on Cincinnati, Wabash & Michigan ran into rear of freight at Elkhart, Ind., damaging engine and several cars.

27th, a. m., freight on Louisville, New Albany & Chicago broke in two near Edwardsville, Ind., and rear section ran back down grade and into following freight, wrecking engine and 3 cars.

28th, night, freight on St. Louis, Iron Mountain & Southern ran into preceding freight near Victoria, Mo., damaging 17 cars.

29th, p. m., passenger train on Pennsylvania Railroad ran into rear of freight at Elizabethtown, Pa., damaging engine and 6 cars, and injuring 2 trainmen.

30th, a. m., passenger train on Cornwall road ran into rear of freight at Donaghmore Furnace, Pa., wrecking 2 cars and killing a trainman.

BUTTING.

5th, night, butting collision between freight and passenger trains on Northern Pacific near Fridley, Minn., damaged both engines and 3 cars. Two passengers slightly hurt.

6th, night, butting collision between two freights on Pennsylvania Railroad near Greensburg, Pa., wrecked both engines and 5 cars.

7th, a. m., butting collision between freight and working trains on New York, Rutland & Montreal near New Lebanon, N. Y., damaged both engines and injured a trainman.

8th, a. m., butting collision between two freights on Chesapeake & Ohio near Limestone, Ky., wrecked both engines and 9 cars, killed 4 trainmen and injured 2 others badly.

9th, night, butting collision between passenger and freight trains on Louisville & Nashville near Sulphur, Ky., wrecked both engines and 5 cars, killed a trainman and injured 2 others. Freight was running on the passenger train's time.

13th, a. m., freight on Cleveland, Akron & Columbus broke in two near Columbus, O., and rear section ran back down grade and into a following passenger train, doing some damage.

19th, night, butting collision between two freights on Chesapeake & Ohio near Charleston, W. Va., damaged both engines and 8 cars.

22d, a. m., butting collision between regular and special passenger trains on Camden & Atlantic at Ancora, N. J., wrecked both engines and one car, injuring engineer and 7 passengers. It is said that the regular train was ahead of time, giving the extra time to make the siding, which it expected to reach; the conductor had no information that he was to meet an extra.

23d, night, butting collision between two passenger trains on Camden & Atlantic near Berlin, N. J., damaged both engines and several cars. It is said that this collision was caused by a heavy fog preventing one engineer from seeing a stop signal at Berlin. This was the second collision the same day.

26th, night, butting collision between two freights on New York, Lake Erie & Western near Otisville, N. Y., wrecked both engines and 11 cars.

23d, night, butting collision between two passenger trains on Central Pacific at Vallejo Junction, Cal., damaged both engines and 4 cars.

28th, a. m., butting collision between two freights on Pennsylvania Railroad at Monmouth Junction, N. J., wrecking both engines and 10 cars.

28th, a. m., butting collision between two freights on Union Pacific, near Papillion, Neb., damaged both engines and 20 cars.

CROSSING.

5th, very early, Delaware, Lackawanna & Western freight ran into New York, Lake Erie & Western coal train at the crossing in Binghamton, N. Y. There was a heavy fog at the time.

11th, a. m., Allegheny Valley freight ran into Buffalo, Rochester & Pittsburgh freight at crossing in Falls Creek, Pa., wrecking engine and 2 cars and killing engineer.

15th, p. m., main line passenger train on New York, Lake Erie & Western ran into Northern New Jersey passenger train which was crossing the main track at the junction at West End, N. J. Engine and 2 cars were damaged. It is said that the main line train disregarded the signal to stop, which was shown at the junction.

23d, night, Detroit, Lansing & Northern, freight ran into Grand Trunk freight at crossing in South Lyon, Mich., wrecking 2 cars.

25th, night, Cleveland, Columbus, Cincinnati & Indianapolis passenger ran into Chicago, St. Louis & Pittsburgh freight at the crossing at Milford Centre, O. A freight car was thrown over on the signal-house, crushing it and killing watchman and another man who was with him.

30th, a. m., passenger train on Pennsylvania Railroad ran into passenger train on Mt. Holly Branch at crossing in Mt. Holly, N. J., damaging 3 cars.

DERAILMENTS.

BROKEN RAIL.

2d, night, passenger train on Utah & Northern was derailed near Dillon, Mont., by broken rail. A car upset, injuring 9 passengers slightly.

7th, night, freight on Louisville, Evansville & St. Louis was derailed near Albion, Ill., by broken rail. Trainman slightly hurt.

28th, a. m., freight on Missouri, Kansas & Texas was derailed near Muskogee, Ind. Ter., by broken rail.

BROKEN FROG.

28th, very early, passenger train on Cleveland, Columbus, Cincinnati & Indianapolis was derailed in Indianapolis, Ind., by broken frog.

BROKEN SWITCH-ROD.

30th, p. m., freight on Connecticut River road was derailed in Springfield, Mass., by broken switch-rod. Fireman slightly hurt.

BROKEN BRIDGE.

18th, night, mixed train on Brattleboro & Whitehall broke through bridge near Brattleboro, Vt., and the whole train went down into West River 60 feet. The engineer and a passenger were killed, 2 trainmen and 5 passengers hurt. The bridge was of wood and iron 200 ft. span; it is said that the rolling stock on the road (3 ft. gauge) is much heavier than was expected to be used when the road was built.

21st, p. m., passenger train on Burlington, Cedar Rapids & Northern broke through bridge near Norris, Ia., 2 cars going down into the creek. A tramp on platform of baggage car was badly hurt.

SPREADING OF RAILS.

19th, p. m., freight on Philadelphia & Reading was derailed near Bushong Furnace, Pa., by spreading of the rails, and 3 trainmen hurt.

21st, a. m., engine of passenger train on Buffalo, New York & Philadelphia was derailed near Olean, N. Y., by spreading of the rails. Engineer slightly hurt.

31st, a. m., freight on Evansville & Indianapolis was derailed near Washington, Ind., by spreading of the rails, and 2 trainmen hurt.

31st, night, freight on Chicago, Milwaukee & St. Paul was derailed near Sioux City, Ia., by spreading of the rails.

BROKEN WHEEL.

8th, night, freight on Pittsburgh, Cincinnati & St. Louis was derailed near Mansfield, Pa., by broken wheel.

14th, noon, locomotive of passenger train on New York Central & Hudson River was derailed in Albany, N. Y., by broken truck wheel.

16th, night, passenger train on Louisville & Nashville was derailed near Greenville, Ala., by broken wheel, and a trainman hurt.

23d, night, 2 cars of freight on Central of New Jersey were derailed in Plainfield, N. J., by broken wheel.

28th, p. m., freight on Ogdensburg & Lake Champlain was derailed near Forest, N. Y., by broken wheel.

BROKEN AXLE.

4th, night, freight on Chesapeake, Ohio & Southwestern was derailed near Paducah, Ky., by broken axle, and 2 trainmen hurt.

5th, a. m., 14 cars of freight on New York, Lake Erie & Western were derailed near New Hampton, N. Y., by broken axle.

23d, night, passenger train on Gulf, Colorado & Santa Fe was derailed near Lyons, Tex., by broken axle, and rear car upset, killing one passenger and injuring 15 others.

24th, a. m., freight on Pittsburgh, Fort Wayne & Chicago was derailed near Beaver Falls, Pa., by broken axle.

27th, night, 3 cars of passenger train on Missouri Pacific were derailed at Knobmaster, Mo., by broken axle, killing a trainman, injuring 2 trainmen and 5 passengers.

BROKEN TRUCK.

2d, night, passenger train on Annapolis & Elkridge was derailed near Odenton, Md., by breaking of tender truck.

ACCIDENTAL OBSTRUCTION.

7th, night, freight on Chicago, Milwaukee & St. Paul was derailed at Eggleston, Minn., by timbers from a burning

building which had fallen on the track. The wreck caught fire and 17 cars were burned; 4 tramps stealing a ride were killed and 3 hurt.

8th, a. m., passenger train on Chateaugay road was derailed near Lyon Mountain, N. Y., by some stones which had fallen on the track.

20th, very early, freight on Northern Central was derailed near Roaring Branch, Pa., by rock fallen on the track in a cut.

24th, a. m., passenger train on New York, Pennsylvania & Ohio was derailed at Hiram, O., by clay dumped on the track at a road crossing by men who were repairing the highway. Engineer and fireman hurt.

CATTLE ON TRACK.

5th, a. m., passenger train on Grand Rapids & Indiana ran over a cow near Bryant, Ind., derailing engine and 3 cars.

22d, very early, freight on Philadelphia, Wilmington & Baltimore ran over a cow near Bellevue, Del., and engine and 5 cars were derailed.

22d, night, freight on Memphis & Little Rock ran over a cow near Ink Bayou, Ark., derailing engine and 2 cars and injuring fireman.

LAND-SLIDES AND WASHOUTS.

6th, p. m., passenger train on Virginia Midland was derailed near North Garden, Va., by land-slide. Engineer slightly hurt.

8th, a. m., passenger train on South Florida ran into washout at Winter Haven, Fla., damaging engine, 2 cars and injuring 2 trainmen slightly.

11th, very early freight on Petersburg road ran into washout at Otter Dam Creek, Va., wrecking engine and 5 cars. Engineer slightly hurt.

14th, a. m., freight on Pittsburgh, Wheeling & Kentucky ran into washout near Wheeling, W. Va., wrecking engine and 8 cars and injuring engineer.

EARTHQUAKE.

31st, night, freight on South Carolina road was derailed at Langley Mills, S. C., by the effects of the earthquake on the track and the engine went into a pond close by. The fireman was drowned, the engineer hurt.

31st, night, passenger train on South Carolina road ran into a break in the track caused by the earthquake near Summerville, S. C. The engine was wrecked, the fireman killed.

31st, night, passenger train on South Carolina road was derailed near Ten-mile Hill, S. C., by the direct effects of the earthquake on the track.

MISPLACED SWITCH.

15th, very early, 3 cars of freight on New York, Philadelphia & Norfolk were derailed at Fruitland, Md., by misplaced switch.

18th, night, freight on Texas & Pacific was derailed at Hallsville, Tex., by misplaced switch, killing a tramp stealing a ride.

21st, very early, freight on Cincinnati, Washington & Baltimore was derailed in Cincinnati, O., by misplaced switch and 3 cars ran across the street, wrecking a wagon and knocking down the front of a small house. The driver of the wagon was badly hurt.

RAIL REMOVED FOR REPAIRS.

19th, a. m., freight on Florida Railway & Navigation Co. road was derailed near Lake Ogden, Fla., where trackmen had taken up a rail for repairs and failed to put out signal.

MALICIOUSLY CAUSED.

12th, night, coal train on Philadelphia & Reading was derailed near Williamsport, Pa., by purposely misplaced switch.

15th, night, freight on Wilmington & Northern was derailed near Lenape, Pa., by two heavy logs placed across the track.

15th, night, freight on Lake Shore & Michigan Southern was derailed in Chicago by purposely misplaced switch.

23d, very early, passenger train on Louisville & Nashville was derailed in Evansville, Ind., by switch purposely misplaced. A car upset, injuring 5 passengers slightly.

UNEXPLAINED.

15th, noon, car of freight on New York Central & Hudson River was derailed near Utica, N. Y., and upset.

18th, p. m., freight on New York Central & Hudson River was derailed near Eagle Harbor, N. Y., and a car upset.

27th, a. m., 5 cars of freight on Missouri, Kansas & Texas were derailed near Wagner, Ind. Ter., and wrecked.

28th, a. m., freight on New York, Lake Erie & Western was derailed near Carrollton, N. Y., and 2 trainmen hurt.

30th, a. m., passenger train on Cincinnati, New Orleans & Texas Pacific was derailed near Dry Ridge, Ky. Engineer killed and 3 trainmen hurt.

OTHER ACCIDENTS.

BOILER EXPLOSIONS.

2d, a. m., as freight on New York Central & Hudson River was near Clyde, N. Y., a flue collapsed and the steam burst into the cab through the fire-door, scalding engineer fatally and fireman badly.

10th, a. m., yard engine on Union Pacific exploded its boiler in Kansas City, Mo., wrecking the engine, killing 2 men who were on it and badly injuring a third and a switchman who was standing near.

11th, night, yard engine on Louisville & Nashville exploded its boiler in Lexington, Ky., wrecking the engine, killing engineer and injuring fireman fatally.

21st, a. m., engine of freight on West Virginia Central & Pittsburgh exploded its boiler while running near Shaw, W. Va., the engine was thrown over on its side, the fireman killed, the engineer and 2 other trainmen hurt.

23d, a. m., engine of freight on Ulster & Delaware exploded its boiler while standing in the yard at Rondout, N. Y. Engine was wrecked, engineer and fireman badly hurt.

24th, noon, engine of passenger train on Rome, Watertown & Ogdensburg collapsed a flue when near Camden, N. Y., letting the water into the fire-box and putting out the fire.

BROKEN PARALLEL ROD.

4th, very early, engine of passenger train on Petersburg road broke a parallel rod when near Pleasant Hill, N. C., and the loose end tore a hole in the boiler. The engineer was badly scalded by escaping steam, but succeeded in stopping the train.

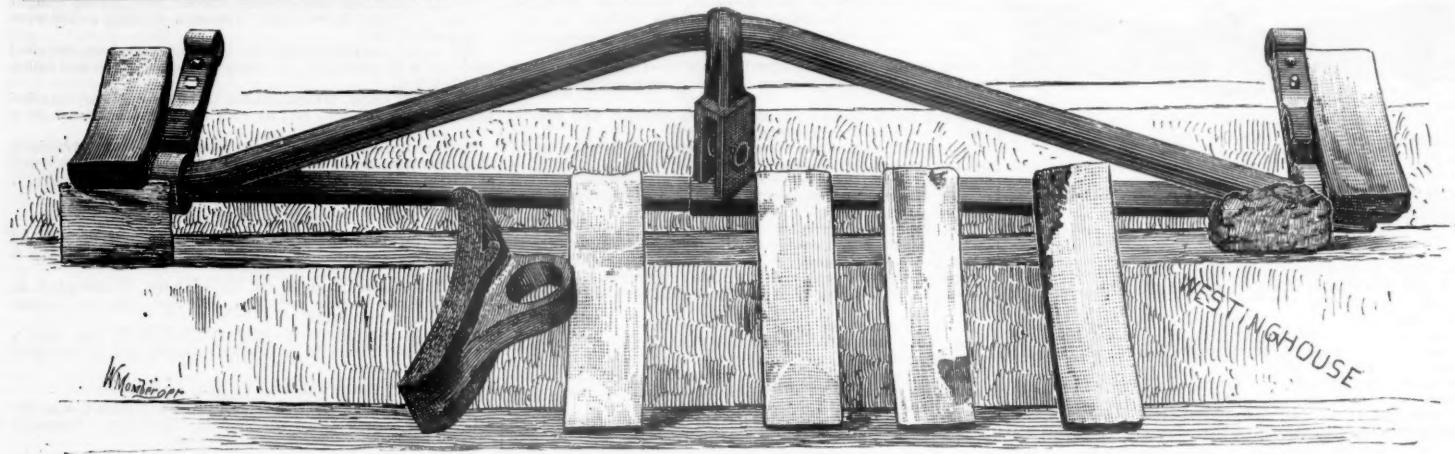
5th, p. m., locomotive of passenger train on Central of New Jersey broke a parallel rod when near Elizabethport, N. J., and was badly damaged.

25th, p. m., engine of passenger train on New York, Lake Erie & Western broke a parallel rod when near Secaucus, N. J., and was much damaged.

27th, a. m., locomotive of passenger train on New York, Lake Erie & Western broke a parallel rod when near Otisville, N. Y., and was badly damaged.

RUNAWAY TRAINS.

25th, p. m., construction train on Asheville & Spartanburg broke in two near Saluda, N. C



30th, a. m., passenger train on Manhattan Elevated ran into bumper at Chatham Square (terminal) station in New York, damaging car and injuring 2 passengers slightly. It is said that the vacuum brakes were out of order.

MISCELLANEOUS.

23d, a. m., as passenger train on Long Island road was near Newtown, N. Y., a heavy beam fell from an overhead highway bridge which was being repaired, and struck the engine, damaging it considerably. Fireman slightly hurt.

29th, night, car loaded with cotton on Louisville, New Orleans & Texas caught fire when near Clarksdale, Miss., and was destroyed.

SUMMARY.

This is a total of 115 accidents, in which 31 persons were killed and 117 injured. As compared with August, 1885, there was an increase of 25 accidents; but a decrease of 6 killed and of 55 injured.

The eight months of the current year to the end of August show a total of 708 accidents, 244 killed and 944 hurt; a monthly average of 89 accidents, 31 killed and 118 injured.

A fuller statement of totals and averages, with a summary of the causes of accident, will be found on another page.

Condition of Brake Shoes in Burlington Brake Tests.

We give this week the engravings referred to in the article on page 659 of last week's issue, to which we refer for further details. The engravings almost explain themselves, but were crowded out of our last issue to make room for the illustrations given of the Silver Creek catastrophe.

Discussion of the Interchange Rules.

The first regular meeting of the third year of the Western Railway Club was held on Wednesday, Sept. 22 in Chicago, 23 members being present, including some 12 prominent mechanical officers of railroads. President C. F. Pierce occupied the chair.

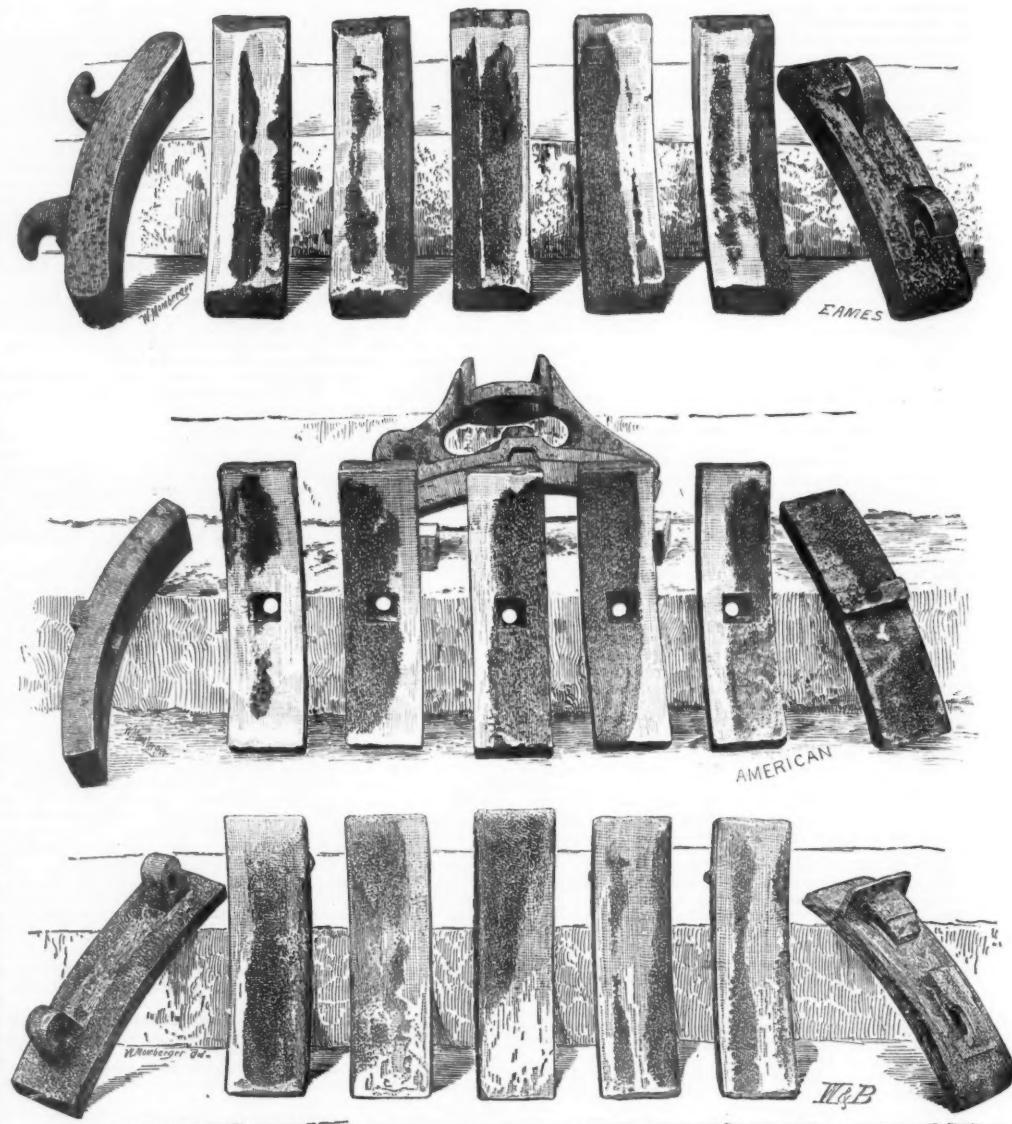
The annual dues, beginning with September of this year, were reduced from \$5 to \$2.

The Club took up "The subjects dealt with at the meeting of the Master Car-Builders at Niagara Falls in June last."

Mr. G. W. RHODES (Chicago, Burlington & Quincy) remarked that one of the most interesting subjects at the meeting was the discussion on the interchange rules. That opened a rather wide field, and it excited a good deal of interest. One of the most important questions was the gauge of wheels, and a move was made in the convention as to the limit between flanges of wheels, a subject which has not been so definitely touched upon by the Association at any former meeting. Another subject was axles and size of journals. It was also said that the weight of cars that are being made now are, in some cases, being increased by the paint brush instead of by strength of the materials. He had understood that in some of the Eastern clubs they are discussing also the best method of getting the members of the Association to follow out the standards of the Association. One of the faults seems to be that a committee is appointed by the Association, and they spend a good deal of time on the subject they have to examine. Sometimes the views they have started out with are entirely changed by the time they have completed their investigations. Then they make their report to the Association, and for the first time the members of the Association hear these results. They have not the benefit of the careful investigation the committee have had, and the result is that when the new subject is broached to the convention they generally simply endorse their committee, and it seems to me as if some move doing away with the necessity of the Association acting so quickly on the recommendation of the committee might be a useful thing. It had struck him that these sub clubs in the East and in the West might be used to great advantage. Why should not these reports of the committees be submitted first to these clubs and be discussed by them. Then members would go to the Master Car-Builders' Convention, having given the subjects considerable investigation, instead of going there and hearing the reports for the first time.

Mr. W. A. SCOTT (Chicago & Northwestern) : Mr. Rhodes, in touching upon the Master Car-Builders' Association's meeting at Niagara Falls, said they did their work hurriedly, and they did. We came away from there without very much improvement in our interchange rules, and I do not see that we are going to get it next year either. We will go there with crude ideas of what is wanted, and we will act as before—ride around a good deal, and go and see the folks, but we won't take any action until the last minute. We can take up those matters, and if the Club goes on successfully I shall be very glad to participate in these discussions. The interchange rules interest every road, and if we discuss those rules it will probably add to the membership of the Club. The roads will want to be represented at this Club as well as in the Association, and for my own part I feel that our road wants to join in that direction. We are not facilitating the movement of cars at all, in my opinion, by what has been done. A great many differences have come up since we came away from Niagara Falls that should have been settled there, and if we can settle them during the year—put the matter in shape so that we may be able to take them up intelligently there—it will be a work of great good to all concerned, I think.

Mr. B. K. VERBRYCK (Chicago, Rock Island & Pacific): Mr. Scott has expressed my views most accurately. Since



SAMPLES SHOWING CONDITION OF BRAKE SHOES AT END OF BURLINGTON BRAKE TESTS.
(Taken from the 5th, 15th, 25th, 35th and 45th car of each train).

the meeting at Niagara Falls, as he says, a great many questions have come up about the interchange of cars that have given us trouble, and as the rules were adopted at that time they appear to me to be very defective, some of them at any rate, and I am very much in favor of discussing the rules here in our Club and come to some conclusion that we can work intelligently at our next annual meeting, as Mr. Scott has suggested. I would just mention that I was last week in New York at a meeting of the Executive Committee of the Master Car-Builders' Association, and some of these points came up which the Executive Committee had to decide for the present, that is, until the next annual meeting, and we found that there were a great many things that should be altered. I think it would be very valuable to all of us to have the rules of interchange taken up one by one in our Club and thoroughly discussed, and get the opinion of all the members on the different rules and where they could be revised so as to make them much more efficient than they are now. Certainly the way they are at present it is quite difficult in some cases for our inspectors to understand the rules. They could be made very much plainer than they are, and if we do that in our Club we will be prepared when the Association meets again, and the rules come up for revision, to talk intelligently on the matter.

Mr. G. W. STEVENS (Lake Shore & Michigan Southern) could readily see the necessity of some action of that kind, but just where to commence, whether it is to be taken from the forthcoming reports of the committee or the reports already adopted, he did not see. If it is the reports already adopted they could be taken up section by section and discussed and commented upon and resolutions passed, or any

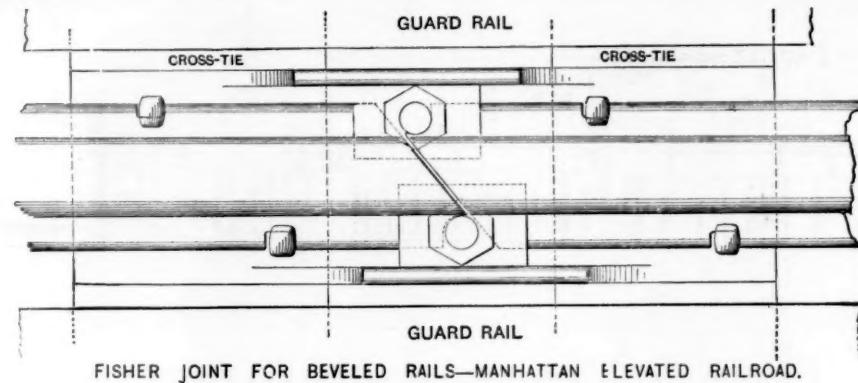
thing of the kind that seemed proper to the members, but if it is the reports that are to be made, unless there is some definite time stated when the committee shall be through with its work, he failed to see just where the benefit will come in.

Mr. W. B. SNOW (Illinois Central) thought that the more you tinker with those rules every year the worse they are. He thought the rules are well enough as they are. He could understand them, and did not see why they cannot be understood perfectly.

Mr. JACOB JOHANN (Chicago & Atlantic) differed from Mr. Snow, and thought it is highly proper to discuss those rules at the Club meetings. The rules were clear enough when every one is disposed to interpret them liberally. The trouble is that some are disposed to draw them rather fine. They are satisfactory to him if every one interprets them in a liberal sense, but there are some parts of them that we might have a better understanding of.

Mr. SNOW : I did not mean to be understood as opposing the discussion. I simply opposed changing them every year.

Mr. SCOTT : Mr. Snow says the rules suit him, and the more we change them the worse they are. Is it not a fact that we are changing our equipment all the time, and is it not a fact that we ought to progress as the roads progress? It is our experience at some of our interchange points that by demurrage on car and the repairs that are had upon it we have to lay out more on that car to get rid of it than we get freight. If the least thing is wrong, we have to hear about it; and the correspondence over these Western roads is very large on that subject, and, as a general thing, very unsatisfactory.



FISHER JOINT FOR BEVELED RAILS—MANHATTAN ELEVATED RAILROAD.

The rules are plain enough for the average inspector to understand. Mr. Snow may understand them, we may all understand them, but our inspectors at \$50 to \$55 a month do not understand those rules, and they get us into trouble. The work which will bear the most fruit, he thought, is in the line of organized effort at our meeting in Minneapolis next year. It was clearly seen at Niagara Falls that the Eastern clubs had by discussion on these subjects posted themselves very thoroughly. They came there organized, and did much more effective work than the Western roads. The Western members made no organized efforts; there had been no meeting, no concentrated work done on any of these subjects, and the moment they were touched upon, those who had had their heads together and knew each other's opinions were fully able to lead off, and we, as it may be vulgarly termed, tailed on.

Mr. Wm. FORSYTH (Chicago, Burlington & Quincy) noticed that the New England Railroad Club had as the subject for discussion at their next meeting "Interchange of Cars."

It was voted that the subject for discussion at next meeting be the first six rules adopted by the Master Car-Builders' Association at Niagara Falls, and that one hour be devoted to the discussion.

Officers for the ensuing year were elected as follows: President, G. W. Stevens (Lake Shore & Michigan Southern); Vice-President, H. L. Cooper (Lake Erie & Western); Secretary, Angus Sinclair (*National Car-Builder*); Treasurer, W. B. Snow (Illinois Central).

Mr. STEVENS requested permission to withdraw on account of his inability to be in regular attendance at the meetings of the Club and was excused.

Mr. W. A. SCOTT, Assistant Superintendent of Motive Power and Machinery, Chicago & Northwestern, was then unanimously elected to the position, notwithstanding his statement that an older member should be made President.

President PIERCE thanked the Club for the courtesy extended to him during his term of office, and introduced Mr. Scott. Mr. Scott took the chair and made a short address, referring to the present standing and future prospects of the Club, the work it ought to perform, and the obligation resting upon each member to work for its interests and thereby for the interests of the roads they represented.

Mr. STEVENS suggested that "Driving-Wheel Centres and Section of Tire" be discussed at the next meeting. He noticed a growing disposition to use thick tires; a great many 4 in. tires were going on.

Mr. RHODES suggested that subordinate heads of departments be invited to attend during the discussion of the Interchange Rules at the next meeting, which was carried.

Fisher Joint for Beveled Rails—Manhattan Elevated Railroad.

The rattle and noise of the joints on the New York elevated railroads has been always a conspicuous and objectionable feature. They are very much more noisy and in worse average condition than on most surface roads. At first this seems against nature, especially as the rolling stock of the road is quite light and the support to the ties absolute. In this latter fact, however, lies most of the difficulty, beyond question, for reasons suggested in discussing "The Argument for Broken Joints," in the *Railroad Gazette* of Jan. 30 and Feb. 6, 1885. The weakness of the rail at the joint causes the ties to compress and wear more, and there is no way of taking up this wear by extra care, as on an ordinary road bed.

Certainly the load per wheel is very light, and no other explanation seems possible. There has been the usual process of creeping up in loads. The Ninth avenue elevated started with 2,000 lbs. per wheel. This soon crept up, on the new structure, to nearly 4,000 lbs., and as the other lines went on was again increased to nearly 7,000 lbs. per wheel, at which limit, which is still very low, it is likely to stay until the structure is rebuilt or strengthened. With such a limit the 56-lb. rails (50-lb. on Third avenue) were certainly far stronger in proportion than 60 or 66-lb. rails for ordinary service, but that the track was inadequate for the requirements has been long apparent.

Three remedies have been adopted for this evil: (1) 70-lb. rails; (2) the Fisher joint; (3) bevel-ends to the rails, the latest form of the three combined being illustrated in our engraving. That the combination is an immense success for accomplishing its end is beyond question. The joints are barely distinguishable by the most careful attention, and the noise of the train is not one-fifth as great. Only a short stretch of track has been laid with this device as yet, but more has been ordered, although the expense of cutting off the rails on a bevel is great, there being no machine for the purpose yet complete, so that the rails have to be cut off in a slotter. Mr. John Fritz, Chief Engineer and General Superintendent of the Bethlehem Iron Co., has designed and is now constructing a machine for the purpose which is expected to reduce the additional cost to a merely nominal sum.

The road has laid a considerable stretch of 70-lb. rails on the Third avenue lines with angle-bar joints, and another considerable stretch on the Sixth avenue line with Fisher joints and square ends to rails, so that some basis is afforded for estimating the relative effect of the three new features in reducing wear. There can be no question that the increase

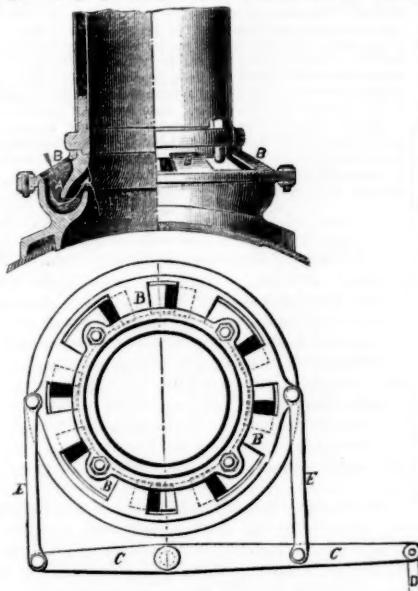
in weight of the rail is the main factor in the improvement, because all the 70-lb. track is vastly less noisy than that of lighter section; but there can also be no question that each change has its effect, because, of the three kinds of 70-lb. track, that laid with the joint illustrated is perceptibly the least noisy and the angle-bar track perceptibly the most noisy of the three, although the difference is not very great. It will be seen that the Fisher type lends itself very conveniently to the use of beveled joints, and we understand that the form illustrated has been practically adopted as standard for all renewals.

Luttgens' Variable Exhaust Damper.

The device illustrated, it will be clear, is designed to accomplish the same end as a variable exhaust nozzle in a simpler and more acceptable way, by placing a damper at the base of the smoke-stack, through which air can be admitted in any volume desired.

This damper is carried on castings, which take the place of the ordinary smoke-pipe saddle. It is applicable to every style of locomotive stacks by merely making new castings.

The engineer, by operating a plain rod *D* with a handle



Luttgens' Variable Exhaust Damper.

placed within the cab, moderates the effect of the draft upon the fire at pleasure, by rotating the circular valve *B* (preferably made of brass), placed over apertures which it covers or uncovers, and which communicate with the inside of the stack. The direction of the current of air is indicated by the arrows.

Advantages claimed for the device are that it is very effectual as a spark arrester; that it softens the sound of the exhaust; that it places the steam pressure under the control of the engineer, and that even when the engine is working hard it may be used at any place of danger from sparks without materially affecting the steam pressure.

Tests of one week's duration on the New York, Susquehanna & Western, between two twin engines of similar age and proportions, are certified by Mr. W. C. Ennis, Master Mechanic of the road, to have shown a consumption of 61,000 against 71,000 lbs. of coal, a difference in favor of the engine fitted with the damper of 10,000 lbs., or over 16 per cent.

Both of these engines were used for heavy coal trains and were taxed to the utmost of their capacity in regard to speed and power.

The first of these dampers was placed on an engine for the Brooklyn & Rockaway Beach Railroad in the spring of 1885. A second engine has been fitted out this season. Others are in use on the New York, Susquehanna & Western, the Savannah, Florida & Western, the Charleston & Savannah, and the Housatonic; also on two engines built for the Cardenas & Incoro Railroad of Cuba, and on some being built for South America. All these are applied by the Rogers Locomotive & Machine Works, of Paterson, N. J. The inventor is H. A. Luttgens, of Paterson, N. J.

Glass Sleepers and Rails.

Mr. Siemens writes as follows to an English paper from Dresden, Aug. 27: "As concerns the report mentioned in

several English papers about the discovery of producing rails in the same way as sleepers, I must state that the contents of this report are founded on a misunderstanding. German newspapers, which brought their articles regarding cast glass translated from English journals, erroneously translated the English 'sleeper' into the German 'schiene,' signifying 'rails' in English, and it was this mistake which led the English papers to the opinion that Mr. Frederick Siemens had succeeded in manufacturing also rails from cast-glass. Allow me to add for public information that a sample of these glass sleepers, recently tested at the Anderson Foundry Co., Limited, Glasgow, resisted a falling weight of $3\frac{1}{4}$ cwt. falling upon a rail placed upon the sleeper set in sand ballast, commencing at 6 in. and rising by succeeding increments of 6 in. up to 9 ft. 6 in.—the maximum elevation to which the test ram could be elevated—without effects until the blow had been repeated for the sixth time. Cast iron sleepers are expected to withstand a similar test up to 7 ft. only. The cost of glass sleepers will be considerably less than those of either cast iron or steel, while the material is practically imperishable as regards climatic changes, influences, or the ravages of such insects as the white ant."

Master Mechanics' Association Circulars.

Secretary J. H. Setchel has issued the following committee circulars from his office at Dunkirk, Sept. 15:

COAL DELIVERY TO LOCOMOTIVE TENDERS.

1. Describe the various systems of delivering coal to tenders that you use. If any machinery, staging or special equipment is used send blue print of same.

2. Say why different systems are used at different stations, specifying which you prefer, and giving reasons for preference.

3. Give average cost of delivery per ton under each system, and so that comparison may be made of value and thoroughly understood. State the average number of tons delivered each 24 hours, the number of men required in the 24 hours and the average rate of pay per 12 hours for unskilled labor. (It would make this comparison more interesting if, when a special plant such as crane, shutes, staging, etc., is used, its first cost and maximum capacity of delivery per 24 hours were stated.)

4. Describe any special conveniences you are familiar with for coaling the bunkers of switching, tank and other engines not provided with tender.

N. B.—Replies will be treated as referring to soft coal and the short ton of 2,000 lbs., unless it is otherwise stated.

JAS. STRODE, Northern Central
CHAS. GRAHAM, Del., Lacka, & Western Committee.

J. DAVIS BARNETT, Grand Trunk
Replies to be addressed to J. Davis Barnett, Port Hope, Ontario, Canada.

GAUGES FOR DRIVING WHEEL TIRES AND CENTRES.

At the annual meeting of the American Railway Master Mechanics' Association held in Boston, in June, 1886, the report of the Committee on Standard Diameters of Driving Wheel Centres was unanimously adopted.

The sizes proposed by the Committee and adopted by the Association, are as follows: 38 in., 44 in., 50 in., 56 in., 62 in. and 66 in.

The Committee was instructed to make arrangements with the Pratt & Whitney Co. or some other respectable firm, to make and furnish the railroad companies, locomotive builders and tire manufacturers, standard gauges representing the various sizes adopted, both for the outside diameter of wheel centre and for the inside diameter of tire, for each size as given above.

The Committee have made such arrangement with the Pratt & Whitney Co., of Hartford, Conn., who are now prepared to enter orders for these gauges, made in accordance with plans submitted to and approved by the Committee, and will furnish them either in sets comprising the six sizes adopted, or in pairs, separately, at the following prices, which are net, delivered on board at Hartford, quotations subject to orders being received on or before Oct. 15, 1886: Set of 6 pairs Standard Reference Gauges, for outside and inside measurement, complete in finished cherry cases, with lock, \$105. For parts of set, in pairs, or for single pair, \$26 per pair. Cherry cases for parts of set, \$5 to \$7.50 extra.

As it is desirable to have the new system embodying this standard of uniformity introduced at as early date as possible, and in order to take advantage of the exceptionally low prices offered, orders should be placed with the Pratt & Whitney Co., on or before Oct. 15, 1886.

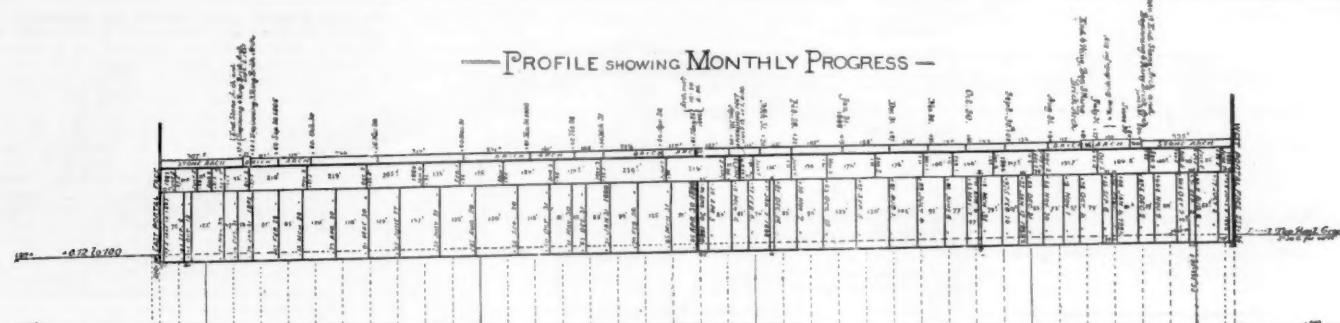
The sizes represented for inside diameter of tire, for each of the 6 gauges in the full set are as follows:

38 in., less 0.040 in.	37 960 in.
44 in., less 0.047 in.	43 93 in.
50 in., less 0.053 in.	49 047 in.
56 in., less 0.060 in.	55 940 in.
62 in., less 0.066 in.	61 934 in.
66 in., less 0.070 in.	65 930 in.

J. N. LAUDER,
JACOB JOHANN,
H. N. SPRAGUE, Committee.

Prosperity of Lake Vessels.

In many years have the shipping interests of the lakes enjoyed such a continuous run of prosperity as has characterized the first five months of the present season. From the opening of navigation vessels of every class, ranging from the monster iron steamship of 3,000 tons down to the little coarse freight hooker, have found steady employment, and the outlook for the closing months of the season is even more flattering. Freights have been more plentiful than in many seasons, and the rates for carrying have been unusually profitable; so much so, in fact, that the fears so often expressed that the lake marine had seen its best days seem to be unfounded. Of course there are a few chronic croakers who continue to prate about hard times and whine for a return of the days when they got as high as 33 cents a bushel for carrying grain from Michigan City to Buffalo. They will never come. Those exorbitant rates were paid before the era of railroads and at a period when the lake marine was in its infancy. A vessel that could carry 7,000 bushels of wheat was above the average, while one with a capacity for 15,000 bushels was a monster. Steamboats were unknown. Nor were there the same facilities for crowding sailing craft to their utmost possibilities that have since been introduced. In those days vessels made the entire trip from Buffalo to Chicago without the aid of steam tugs. They sailed through the rivers that connect Lake Erie with Lake Huron and proceeded on their course to the mouth of the Chicago River, where they frequently remained for days discharging their cargoes of merchandise into lighters. After this work was performed cargoes of grain had to be carried aboard in bags, and frequently, when the winds were unfavorable, from a month to six weeks was consumed in making a round trip. Compare those times with the present, and it can be readily seen why water transportation rates have been crowded down. Railroad competition has developed the necessity for larger and swifter vessels and far better facilities in handling their cargoes. Consequently the little



PLAN OF TUNNEL SHOWING SIDE WALLS OF ARCH.

Total Length 3902 ft.

THE VOSBURG TUNNEL—PENNSYLVANIA & NEW YORK RAILROAD.

brigantine of fifty years ago has passed out of existence to make room for sailing vessels of five times her capacity, and by the same process of evolution these are being crowded out of the grain-carrying trade by large steamers and tow barges. Shrewd managers of great transportation companies are convinced that the future lake carriers must be able to freight wheat 1,000 miles for one cent a bushel, and steamships are now being built that are designed to carry 3,000 tons of freight and make a round trip between Buffalo and Chicago in less than a week, not including the time consumed in loading and unloading. It would be as silly to compare the lake carrying trade of today with that of a half century ago as it would to compare the railroad with the stage coach.

A comparison between the present season and last is more to the point, and will probably prove far more interesting. Last season was financially the most disastrous one the vessel interests ever experienced. It was full of disappointing results, though but little more so than the season preceding it. At the beginning of both seasons indications pointed to considerable activity in the carrying trade, but within a few weeks after the fleet went into commission the bright prospects vanished, leaving in their wake a dreary waste of blighted hopes. Rates were reduced to a lower minimum than was ever known before, and cargoes were so scarce that vessels were forced to remain idle at their docks for weeks at a time. Many gave up the battle and went into winter quarters long before the season closed, and those that remained in commission barely earned enough to pay their actual running expenses. It is but little wonder that owners of vessel property became disheartened, or that repeated disappointments blinded their eyes to the signs of renewed prosperity that presented themselves at the beginning of this season. Perhaps it is just as well that they could not foresee the prosperity that awaited them, for the very reason that they were unprepared for it has made it all the more welcome. Without going too far back into the history of the lake marine for comparisons, it is interesting to note the difference in carrying rates between the present time and the corresponding period last year.

Just one year ago last week vessels were carrying grain from Chicago to Buffalo for 1 1/4 cents per bushel, and bringing back coal at 40 cents a ton. Rates for transporting ore were on a basis of 60 cents a ton from Escanaba to Cleveland. Even at those rates vessels went begging. This year the begging has been on the side of the shippers, and so great has been the competition for vessels that rates have ruled higher than at any time since the memorable financial crash of 1873. In fact, grain by lake and canal from Chicago to New York has been shipped at the same rate as it would have cost to have sent it through in cars, thus elevating the lake interests to an even level with the trunk lines. Five cents a bushel has been paid on corn from Chicago to Buffalo, and vessels are now bringing back coal at 75 cents, while \$1.60 is refused for carrying ore from Escanaba to Cleveland. Last year a steamer carried a cargo of corn to Buffalo, and the freight aggregated \$1,200. She left here with a similar cargo last week, and at the end of her voyage will receive \$4,000. Her expenses for the two trips were precisely the same.

This great improvement in the lake carrying trade is chiefly due to the revival of the iron industry. For several years the greater part of the iron furnaces have been idle, and almost the entire standard tonnage of the lakes was forced to rely on the grain-carrying trade for employment. This year the construction of new railroads, together with other causes, has put fresh life into the manufacturers of iron, and there has been a greater demand for ore than has existed before in many years. The working forces of the mines have consequently been increased, and the estimated output will aggregate upwards of 1,500,000 tons greater than that of last year. Already the shipments exceed those up to the corresponding period last season by 700,000 tons, and shippers say that the close of navigation will find them short of stock. The result is that so many vessels are required in the ore trade that grain shippers find themselves obliged to enter into competition with the ore men and bid liberally for tonnage. Even then grain cannot be moved as fast as desired, but continues to accumulate at the rate of 1,000,000 bushels a week at Chicago alone, and the accumulation at other shipping points is proportionately large. Another point in favor of vessels is the fact that the bulk of the iron ore is being forwarded from Lake Superior. In former years more than one-half of the vessels engaged in the ore carrying trade received their cargoes at Escanaba. The opening of extensive mines at Ashland and Two Harbors has sent many of them to the further end of Lake Superior to load, thereby prolonging the trips and consequently reducing the tonnage. Further reduction is made by the limited lockage facilities between Lake Superior and Lake Huron. Vessels trading to Escanaba can load to their full capacity, while vessels loading at Lake Superior ports cannot pass through the canal locks at the Sault when drawing more than 15 ft. of water. The advance in rates for carrying coal to nearly double the prices paid last year is due to the firm attitude of carriers, who declined to accept the low rates offered by shippers, and went up without cargoes until shippers were compelled to concede an advance. These are some of the causes for the revival of lake commerce, but the railroad managers have contributed largely to the general prosperity by maintaining fair rates on east-

bound shipments by rail. The disastrous railroad war that was prolonged through the greater part of last summer worked great detriment to the vessel interests, for, while the railroads were moving freight far below the cost of transportation, vessels were unable to enter into competition with their more powerful rivals.

Vessels engaged in carrying lumber and other coarse freights, while sharing in the general improvement, have not as yet reaped the benefits enjoyed by grain and ore carriers. One very important factor that has worked against their welfare was the labor disturbance during the first part of the season. Combined with this incombustible enemy was the general stagnation in the lumber trade itself. Railroad construction, however, aided in pulling the lumber fleet out of the mire by giving them large contracts for carrying posts, ties and telegraph poles. Cargoes of this description have been more plentiful than ever before, and are only restricted by the ability of dealers to supply the products. All lumber vessels of standard grade that desired to do so were readily supplied with grain cargoes, and as many withdrew from the lumber fleet for that purpose the others were largely benefited. The reduction of the lumber fleet and a better feeling among dealers recently caused an advance in freights, and a further improvement is looked for. One result of the boom has been to induce vessel owners to invest in new tonnage, and so many contracts have been placed with shipbuilders as to give rise to suspicions that the lake fleet will be so largely augmented next year that carrying rates will sink back into the old unprofitable rut. —*Chicago Tribune*, Sept. 13.

The Vosburg Tunnel.

Within the last few years the Pennsylvania & New York Railroad, forming a part of the route of the Lehigh Valley Railroad from New York to Buffalo, has been double-tracked throughout, important changes in alignment and grades adopted, and general improvements of the road bed and structures along the line introduced. By far the most important work connected with these changes was the construction of the Vosburg tunnel which has just been successfully completed. We give in this issue three cuts, to be followed by others showing more in detail the record of the construction of the tunnel, which was in many respects of much interest.

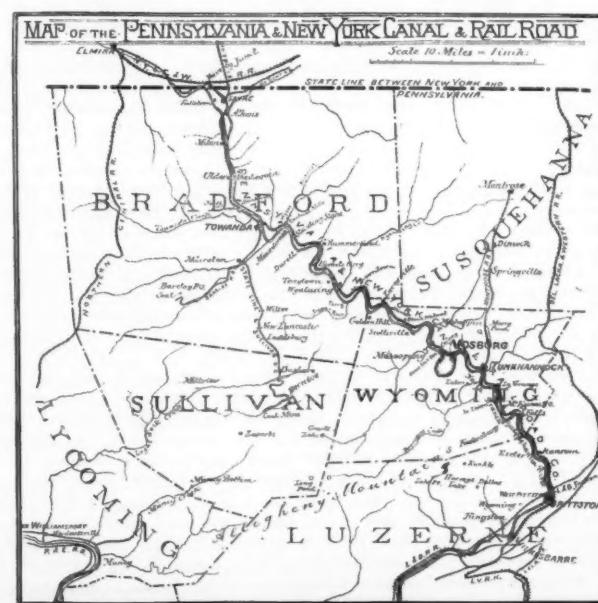
The Vosburg Tunnel is situated in Wyoming County, Pa., 4 1/2 miles north of Tunkhannock and 37 miles north of Wilkesbarre. The old line follows the North Branch of the Susquehanna River, which at this point forms a large bend, known locally as "The Horse-Race," on account of its rapid current. At the narrow part of the bend, known as "The Neck," the river in its circuitous course approaches itself again within less than a mile after a detour of over five miles, and the tunnel penetrating through the mountain at this

point shows a saving of 4.17 miles in distance and of 209 degrees of curvature.

The general alignment of the tunnel is on tangent, excepting a short distance at the west portal, where a 5 deg. 30 m. curve starts inside of the tunnel 137 ft. from the portal. The deviation from the straight line is not sufficient, however, to obstruct the view through the tunnel. The east approach, on a 5 deg. 30 m. curve running into the tunnel tangent 550 ft. from the east portal, is about a quarter of a mile long through a 40-ft. cut and necessitated changing the course of a swift mountain stream and lowering its bed about 8 ft. The west approach is on an embankment filled out into the river and connecting with the old line a quarter of a mile up stream. The grade through the tunnel is 6 1/2 ft. per mile descending with the river.

The tunnel is 3,902 ft. long between portals, and built for double track, spaced 13 ft. between centres. The standard cross-sections will be shown in a following issue.

The material encountered in the east approach was earth and a compact gravel, filled and hardened by an intermixture of clay and fine material. With exception of about 200 ft. at the west portal, the material in the tunnel is rock running in layers, showing a general dip of from 20 to 30 ft. to the mile toward the east. The constantly varying depth and nature of the rock render it impossible to describe the stratification with any degree of accuracy, although in general the lower layers are black and green or gray shales, interspersed with bands of blue sandstone; the central ones blue sandstone and bands of shale; the upper ones red sandstone and red shale. At the east portal the material was earth, the shale rock appearing in the bed only. From there to a point 250 ft. inside the tunnel the upper material is earth, and the rock gradually rises till it reaches the roof of the tunnel near the end of the section. This section was the only one on the work where serious obstacles were met with in prosecuting the work; a water-carrying layer 1 ft. thick in the earth entering the tunnel section near the roof caused many tedious delays by slides over the portal and into the approach. From the end of this section to a point two-fifths in from the east portal the material in the roof is red shale and red sandstone and lower down green shale. The central section of the tunnel shows blue sandstone and shales throughout. Commencing at a point two-fifths in from the west portal the material is blue sandstone interspersed with green and black shales. The Western end of the tunnel is largely composed of blue



MAP SHOWING LOCALITY OF TUNNEL.



EAST PORTAL
THE VOSBURG TUNNEL.

sandstone, and can be rated as about the best section in the tunnel, the abutments for the arching being replaced in some instances by natural berms cut out of the solid rock and part of this section not having required any timbering before arching.

The power used throughout the work for operating drills, hoisting-engine and pumps, was compressed air, supplied at the east end by a single 16 x 32 in. cylinder Ingersoll engine, at the west end by a double 10 x 16 in. cylinder Rand engine. At the east end No. 3 Ingersoll drills were used; at the west end, No. 3 Little Giant Rand drills; four drills in each heading, two in the bench. Two hoisting engines were used at each end, one at the breast and one for the arching. After numerous trials of various explosives, the contractors selected and used generally rackarock in the heading and Atlas powder, with 30 per cent. nitro-glycerine, in the bench.

Electric light was used in the headings to great advantage; but in working the bench and enlargement, and in building the arch after the heading was through, oil lamps were used in preference. Oil torches for common kerosene oil, made by the Standard Lighting Co., of Cleveland, O., were found more convenient and better adapted in all respects, as soon as sufficient draft was obtained through the tunnel.

Further details are postponed until we present the remainder of our engravings.

Contributions.

Standard Specifications.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It will be gratifying if you will permit me to criticise my critic.

In his review of my book of "Standard Specifications" in the *Railroad Gazette* of Sept. 10, I can see no consistency in his saying to his readers, in reference to my work, the following: "There is no attempt to make them [the specifications] of general application or utility by showing from what source they were compiled;" and in another sentence: "The book has, therefore, just that value which would appertain to a pretty complete set of specifications prepared by the author for actual work and no more. This value is often considerable, and the convenience of having them in book form is added."

To condemn by stating: "The work lacks general application," and, on the other hand, to approve by saying: "The book has just that value which would appertain to a pretty complete set of specifications," leaves those interested in a quandary.

I note his objection to the work being defined as "standard." The book is entitled to this definition, as the forms have been used in widely diverse sections of the country, with but little change to make them applicable. This is especially so in the specifications for masonry (his principal objection in this connection), originated by the New York Central Railroad in 1873, and used to-day in the construction of a Western railroad.

JOHN A. YATES.

A Remedy for Lost Car Annoyances.

FAYETTEVILLE, N. C., Sept. 27, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

For some time I have been giving considerable attention to the best methods of rendering our car service accounts more effective and satisfactory to the companies which we represent. Among several other ideas that have received my attention is the present difficulty of placing the responsibility of detention and loss of cars, which all roads, both small and great, have to contend with more or less.

As a remedy for this evil, I propose the following as being the easiest and simplest method, and one which will entail no extra expense: Let the agents at junction points sign each other's daily reports of cars received and delivered, as correct. For instance, when A delivers to B a car belonging to either A, B or C, let B certify that A's report of the same to the Car Accountant is correct. This report then becomes a valuable paper, completely exonerating A, and requiring B either to show delivery of said car to some other road or produce the car.

I am conscious of the fact that some roads already use this

method; in fact, with two of the connections of the road of which I am Car Accountant this is done with most excellent results and the best of feeling; but with many roads such is not the case, and each road has to take its agent's word. Now, railroad men are not all George Washingtons, and it is much better to be able to produce absolute and satisfactory proofs. There is no more reason why cars should not be properly accounted for than freight.

To make the matter plainer, suppose we take an example. The A B railroad delivers to the C D railroad at X, E F railroad car 560, Sept. 25. The agent of the A B road makes out a report of the delivery of this car and the agent of the C D road signs it as correct. The Car Accountant of the A B road sends the E F road a junction report, showing delivery of this car. This will exonerate the A B road, and the E F road looks at once with certainty to the C D road for its disposition of that car, and the last-named road cannot deny receiving it, or, in other words, send the tracer of the E F road home with "No record" indorsed upon it.

One can see at a glance that were this system in general use, cars would be more promptly handled, and there would be very few "lost cars."

Now I do not wish it understood that I am an enemy of lost car agents. There are some roads and lines that will probably always find them useful; but a majority, under this system, could easily dispense with their services. To my certain knowledge, there are roads to-day that have not heard from some of their cars in six or twelve months, probably longer, and those roads have lost car agents. This shows, conclusively, that there is something "rotten in Denmark," and the sooner we improve our system the better. Car service is fast becoming recognized as a separate department. There is a future for car accountants, and we should be prepared and ready, in every way, to render perfect satisfaction to our manager.

E. T. B. GLENN,
Car Accountant Cape Fear & Yadkin Valley Railway.

The Stampede Pass Tunnel on the Northern Pacific

A correspondent of the St. Paul *Pioneer Press* gives the following account of the tunnel now under construction through the Cascade Mountains in Washington Territory, on the Northern Pacific Railroad:

The present location of Stampede Tunnel was definitely decided upon about a year ago. It is one mile south of the pass where the course of Mosquito Creek on the east and Camp Creek on the west form depressions in the mountain at an elevation of 3,837 ft. When finished, the tunnel will be 3,850 ft. long, or nearly two miles—the longest in the country, except, perhaps, the Hoosac. The contract was given to Nelson Bennett, Jan. 22, and he appointed his brother, S. J. Bennett, to superintend the work, and instructed him to proceed at once into the mountain with men and material to begin operations. Fifteen men composed Bennett's party, which began to climb the mountain on Feb. 5 in the face of 10 ft. of snow, and on Feb. 13 the first blast echoed through the dense forests of the Cascades, and the wild beasts that had held undisputed claim for all time prior to that echo stood still in wonder preparatory to their hasty retreat before the advance of civilization. Mosquito Creek, in its course down the mountain, dropped directly over the portal of the tunnel, and flumes had to be constructed and made fast above the work to divert the stream and facilitate the labor. Then four immense boilers and engines were dragged up the mountain on skids over a road that a single horseman finds difficulty in traveling. With these operating improved drills, the addition of more and skilled workmen as the weather opened up, the introduction of two Ingersoll air compressors, the tunnel is being made at the rate of between 11 and 12 ft. per day. The rock is blasted every six hours, and the result loaded by gangs of men into cars and drawn out at the rate of 100 cubic yards per day. Blacksmith and machine shops have been erected in the vicinity of the portal, the compressed air pipes being tapped to furnish combustion at the furnace and blacksmith fires. In a large tank into which the water of Mosquito Creek is turned are four receivers, weighing 6,000 pounds, that yet have to be held at the bottom of the tank by braces to prevent their rising to the surface. The air is forced into these by the compressors for purification, and conducted thence into the tunnel through rubber pipes to the drills, which are clamped to large jacks, made of 6 in. iron pipe and braced by the screws of the jack from the upper bench of the tunnel to the roof. The drills are operated with an average dry-air pressure of 60 pounds. The smoke of the blasts is conducted from the tunnel by a large wooden flue, 28 by 30 in., braced along one side of the tunnel, while along the other a small stream of water is conducted from Mosquito Creek falls for the relief of the

men and use of the drills. The tunnel is for standard gauge track and is 22 ft. high by 16½ ft. wide, with an additional excavation of 6 ft. 10 in. where timber is needed. The road is of the basaltic formation, and it is said by Superintendent Bennett that 6 ft. per day is considered good headway through it. The tunnel is illuminated by electric light, a dynamo being swung from the roof on the line of the centre as indicated by the engineers at every 200 ft. The engine which furnishes the electric light is a small portable Erie, and is too small to supply the demand at a much greater distance in the tunnel, and so will be replaced by water-power from Mosquito Creek falls to a wheel with 162 ft. head.

The west end plant is similar, except that the water wheel will be a 50-ft. head and the compressors are old style Ingersoll. Besides the narrow-gauge track upon which the muck cars are run from the tunnel to the dump, another track 15 ft. wide is laid, upon which is a large elevated platform, which is run up to the breasts; the muck cars are run under this platform, and so the rock from the upper bench is wheeled to and loaded in the cars beneath while the men below use the same car, which is replaced with an empty as fast as the loaded one is removed. And thus the work is expedited.

At the time of this writing over 12,000 cubic yards of rock have been taken from this mountain cave and dumped into the canyon beyond the portal, leaving a dark passage toward the west nearly 800 ft. long. Thus, for the two years allowed the contractor for putting daylight through the heart of the mountain, will the day shift contend with those on the night turn for the credit of having taken out the greatest quantity of rock, until the driller from the east will have penetrated the excavation from the west, through which he may caution the workmen on the other side to "look out, he's going to shoot." Meanwhile, the great switchback will have been built over the summit of the Cascade Mountains through the Stampede Pass, and the merchants and officials of St. Paul, by invitation of the Northern Pacific Railroad Co. will doubtless visit Tacoma-on-the-Sound, and stop on the way to see this great work only now begun.

State and Company Railroad Administration in India.

When railways were first introduced into India it was effected under a system of guaranteed companies. When these had been in operation some time, the state undertook the construction and working. We have, therefore, had experience of both methods, extending over considerable periods of time. It is not possible in a notice of this kind to consider all the relative advantages of both methods. The more salient features alone will be adverted to. As regards construction, it has often been pointed out, and with considerable force, that with the employment of companies the annual charge for interest is likely to be higher per mile of railway made than if the state constructed the lines itself. Not only is it said, though, perhaps, not proved, that the guaranteed shareholder is innocent of a regard for economy in outlay, but also that the ordinary investor must have a higher rate than that at which he will lend to government in order to induce him to lend to a company. Again, if the guaranteed rate of interest is low, there must be good prospect of a surplus dividend, or why should the investor prefer railway paper, which affords only the ordinary rate for good security to government paper. Formerly the rate of interest guaranteed on Indian railways was 5 per cent., with half share of surplus profits above this. Now we hear of a guaranteed of 3½ per cent. with a quarter of the net earnings. A line must earn 4 per cent. before the company can get 1 per cent. surplus net profit or 4 per cent. altogether. If a line should pay 8 per cent. under the Southern Mahratta terms the shareholder gets 3½ per cent. plus a quarter of 8, or 2 per cent. making 5½ per cent., whereas under the old 5 per cent. guaranteed he would get 6½ per cent. Guaranteed railway investments are, therefore, not so paying to the shareholder as they were, and are from this cause cheaper to government. At the same time the rate for Indian loans has declined marvelously. Five-and-a-half and 5 per cent. loans have disappeared; 4½ per cents. will soon follow; 4 per cents. have for some time been below par, while the last Indian loan has just issued at a rate which returns the investor only 3½ per cent. on his money.

There seems no good reason to doubt the ability of the government to raise a reasonable amount of money for railway purposes, without unduly raising the rate of interest. Then it may be asked, why pay more to a company, give it all sorts of concessions and practically lose command of a concern which may either return a good profit to the state or which may be worked at a less profit in the interest of the public by adopting lower fares and rates? As we know that the home government still favors concessions to companies, it appears that we must look farther than the question of merely financing and constructing the railways for a justification of a policy which seems inexpedient and uneconomical to us out here. The expediency of employing companies as judged of at home may arise from a different view of the general policy and the lines on which government control can best be carried on; or it may be that it is assumed or known that economy in working or increased earning, only possible by the agency of commercial enterprise, more than makes up for any larger charge for interest on the capital employed by a commercial agency. We may consider first then that the India Office, despotic as its constitution seems to make it, does not appear at all insensible to the advantages of decentralization in India. The actions of the Indian government have shown that such a decentralization is precisely what is aimed at and desired in respect of many of the affairs appertaining to local matters. But while there is this general concordance of opinion in regard to decentralization, it cannot but be noticed that the gravitation towards the centre is the difficulty to which we inevitably succumb where the agency employed is simply that of the bureau. Authority finds itself gradually absorbing more and more power from the thousand and one extremities, while the needful information which should accompany it to enable the power to be judiciously used is left long behind or never arrives at all.

On the other hand the thousand and one individuals at the extremities, who are in direct contact with the work, and are naturally therefore in a position to exercise judgment as far as their vision extends, find their opportunities vanishing while the needful powers are being negotiated through a chain of authorities to the one centre. As we know how the story that was told at No. 1 got metamorphosed by the time it got to the end of the street, we can realize that authority at the centre is not seldom fully justified in refusing sanction. We may take it for granted, as a rule, that if authority were brought to the spot, it would be prompted to put into force the precise power which was asked for from a distance 99 times out of 100. If it would not, it must be its own fault in selecting inefficient assistants. But as a matter of fact, seldom does authority know the assistants or their qualifications. There can be no trusting in the matter. The assistant can neither be trusted by the authority nor can the authority be trusted by the assistant. The most minute information must be written down in a way that will not mislead on every trifling circumstance, and since life is made up of an immense number of small occurrences, the labor of writing becomes ultimately more than can be done in the day's work. Then things must begin to slide from sheer inability to cope with them. It becomes easier to carry

out the ordinary rules and reap such advantages as come within the range of our sickle and give up writing, which is an immense strain. We may save ourselves great worry and run fewer risks of incurring displeasure from failure to make ourselves understood. It will not be noticed that we have let fall some of the golden sheaves if we exert ourselves a little less. We may in time fail to observe such trifles at all. We have really to school ourselves to these little matters, which grieve us only too sadly, if we would continue to work in the swim. It would be absurd to refuse such co-operation as we are asked to afford in an undertaking because we don't approve of the plan of it. Obviously our loyalty is what our employer has a just claim to. But it is as evident that the good man's loyalty is under such circumstances given at the expense of his conscience which ever prompts him to show what his employer's true interests are in such matters as come under his own knowledge.

In commercial undertakings we know very well that the essence of them is made up of trust and personal intercommunication. In place of the torpor from want of power or inclination to move, we have the healthy glow of active and continuous personal effort from top to bottom. The object is clearly defined and therefore all the more easily understood. A master looks not only to command his men, but to hold them to him by his words and his actions. He must have their hearts in the business. They must be encouraged to afford their advice in their respective spheres of operations or they only half put their shoulders to the wheel. A good workman who values his master looks for the friendly recognition, if it is only a single word, and the master who fails him in this would do a kindness by allowing him to leave at once. The workman's position must be unassassable in the yard, and that can only be while he is sure of the master. Where are any of these links in the bureaucratic chain? They have never yet been forged and never will be. The atmosphere is laden with the vapors of jealousies; the turnings are not numbered in the many lanes leading to the centre; there is a thick darkness as regards the motives and designs of the attendants who show the way; we knock ourselves against the corners of conflicting interests, and look in vain for the friendly hand in support of our faltering steps. Contrast the position of these two agencies in their dealings with the public. In which can the greatest confidence of the public be reposed, and whence is the greatest cordiality of co-operation to be expected? From the bureau with its tortuous courses, or the company with its business conducted on purely commercial principles? Which agency is best fitted for treating the ever-varying requirements of trade and taking action on the delicate situations that, carefully followed up, lead to the certainties of profit, a state railway manager who can do little without previous sanction to be got from a distant centre, or a guaranteed company with absolute powers for dealing with the public and ministering to their daily wants? A man who works principally to suit his own idea, or a company that works on the universal and well understood principle of commercial enterprise? If zeal is required, a man will not be slow to put this quality in motion, but he must be allowed some initiative and his actions must not be liable to be misunderstood. He must be supported and given some power of appeal as a guarantee for his position and as a protection against inefficiency or caprice in his superiors. It might perhaps be possible to organize some working establishments on such a footing so as to secure these requirements; in practice it is seldom attained. Power of initiative is as restricted as possible, and is liable to be misunderstood; so it is not freely entered on for fear of displeasure and curtailed promotion. Superiors are often widely separated from those they are directing, while no limit is placed on their power to interfere. Money is shown to be saved by dispensing with various intermediate grades for giving support, while outlay may be economized, if the initiative is restricted, but this is evidently only an accountant's view of economy, and efficiency is sacrificed as a whole. Evidently subordinate authority must be protected, if we are to bring out its full efficiency and we cherish truth and wish it to prevail.

It is consequently a thing of the highest value to have men helping us in the general administration here in India whose positions for special objects are independent of the bureau, and who can assist us with honest opinion and advice, and whom we cannot coerce except as far as their contracts enable us to do so. We have in the railway companies bodies of experienced men who have no object but the welfare of the concerns they conduct, and who are able by their contracts to prevent the eccentricities of some government officials from interfering in and marring the efficiency of the service. This cannot but be a source of satisfaction to the companies and the government itself.

When the guaranteed companies were first started the orders regarding interference with their operations were particularly restrictive. Owing to the long periods of deficits of guaranteed interest which characterized the earlier days of our railways, the scrutiny by government officers became more severe, till nowadays nothing can be done hardly without question, and it is not clear that we have not gone too far toward the hard and fast procedure of the bureaucratic system, and that profits are not less than they might be in consequence. Theoretically no government can go wrong. It is to the interest of everybody concerned that such a theory should be made practicable possible. A government can never be allowed to go wrong without disaster to ourselves. To put mistakes out of the question, a government must never act without the fullest knowledge. But how is the centre of a large administration to promptly know everything or issue orders on every detail? The effort to convey information becomes fruitless when it is required on such a gigantic scale, and there is risk of mistake. It results that authority is often left in ignorance. There is a modicum of safety to subordinates in silence; they may hope for immunity by transfer before the crash comes. Obviously an administration can best be employed, not in doing everything itself, but in devising agencies for doing it, subject to general control, and allowing an intelligent staff full powers to deal promptly with everyday details, leaving such as are of wider scope or only recur periodically for the consideration at leisure of higher authority. The best agency will not be one which has to refer continually for orders, but one which has all necessary general instructions and powers for most purposes. It should be the business of authority to appoint agents who can be trusted, and to support them as long as they are in office, allowing needful discretionary latitude in working to rules so as to suit them to special circumstances. The agency of a regular constituted company offers to Her Majesty's government at home a ready means of countering the centralizing forces always at work in India, and which are eminently prejudicial to railway working, which is simply a mass of detail. A constitution must naturally be granted by supreme authority, as distinguished from local authority. The railway company's agreements are such that the staff are placed in absolute possession by the Secretary of State for looking after certain monopolies deliberately granted, and on terms conceded for specified periods. The staff is appointed by the company, and the company has full power to levy rates and fares between certain fixed limits. The simpler the conditions the easier they are understood by the public, who have in the first instance to be induced to advance their money.

In these conditions we can see a masterly way of doing business. It brings out the best efforts of all concerned in the co-operation, any miscarriage can only happen if the conditions are infringed; it is to everybody's interest that the concession should be jealously maintained. Thus by the monopoly for a fixed period we get fixity of purpose in the management, combined with greatest incentive to develop a traffic which will raise the value of the dividend and the shares. We can reduce monopolies only by the competition afforded by new lines. The management is appointed not by the Indian government but by the company; the agent is therefore in a position to take initiative in detail with confidence. The agent may be consulted with profit, but he can only be coerced as far as the terms of the contract admit. On state railways there is no limit but that imposed by authority on itself for interference with the management, and this limit is naturally constantly varying with the knowledge, tact or temper of the authority concerned at the moment; and then again there are so many masters, they are changed continually, and nobody knows who is to be pleased or what his policy is.

As regards rates and fares the company can, subject to the usual rules regarding any undue preference, etc., do pretty much as it likes. The power to make rates to suit times and occasions, the essence of commercial working, is inseparable from the concession which a company requires, and it remains to show that this privilege is not only an advantage to the company but to the public also. For a line to work commercially it must aim at getting its share of the prosperity of the moment, and must cheerfully bear part of the loss incidental to dullness of trade when that unfortunately arises. To carry at any time at smaller rates than just suffices to admit commodities to the common market under competition and to induce a full flow of traffic on the railway is to divert profit unnecessarily from the railway, which will be wholly and gratuitously absorbed by the capitalist financing the movement of the goods. The origin of the movement of goods is generally the prospect of profit at the market of delivery, and it should be the business of the Traffic Manager to ascertain what rate the goods will bear, so as to leave the needful margin of profit or remuneration to all concerned in the job. To maintain full rates suitable to prosperous times when trade has passed or is passing to a period of depression is to put competition in the objective market out of the question. It is better to have a full traffic at diminished rates than a falling off or none at all; reductions must be made.

Then it becomes a question of how far you can reduce with out positive loss. Occasionally it will happen that markets fall so much as to render competition impossible at all; at other times a line may have a full traffic of another commodity and needs to make no reduction to keep a commodity of declining value moving over the line. By a careful adjustment of rates between the maxima and minima allowed under the contracts, so as to suit market prices and general demand, there arises a compensatory action tending to steady the flow of traffic and make the most of it. A too frequent alteration of rates of course would not be desirable; nor are the fluctuations in prices usually so sudden or violent as to require them.

If this view be the correct one for working railways commercially, how could it be carried out without a very efficient traffic management to watch trade and frame rates and to be furnished with the fullest powers to negotiate and accept through rates and dispose promptly of all other traffic and commercial matters as they crop up. The State railways do not include the grade of Traffic Manager among the staff. There are superintendents, and consequently some one else is the Traffic Manager, or his powers are distributed between many authorities combined or not exercised at all. If the State ways had even such an officer it is improbable that he would be given constitutional powers like those of a Traffic Manager under a company which would leave him sufficiently free to act. On State railways equal mileage rates are the rule. The policy of temporarily raising rates is even not generally concurred in, though profit which should after accrue to the state is by the omission to do so unnecessarily made over to the capitalist at the expense of the tax-payer.

There can be no doubt that more might be made out of our railways, both by the system now sketched out, of rates based on *what the traffic will bear*, and also by the extension of the system of differential rates, and by a combination of the whole of the railways on a simple working plan for effecting through traffic at *special rates suited to times and occasions*. Such a plan could easily be arranged. As the system of differential rates here advocated has formed the subject of complaint against the railway companies at home, it may be well to refer to it here. Differential rates are those which give a lower mileage rate for longest distances, and are said to be fixed with reference to what the traffic will bear. It has been alleged that the companies in carrying at a lower mileage rate for those at a distance than for those nearer the markets are unduly favoring those at distance. Thus a ton of wheat belonging to A, which has to travel 100 miles to reach the market and is carried for 50 pence, would give a mileage rate of $\frac{1}{2}d$. If 66.6 pence was charged to B for his ton of wheat, which has to go 200 miles to the market, the mileage rate would come out at $\frac{1}{2}d$. a ton. A naturally says if you can carry at $\frac{1}{2}d$. a ton to oblige B, why not carry my wheat at the same rate? The explanation evidently is that A and B will be on an *equal footing commercially* if they can land their ton of wheat, including railway freight and all other charges and their own fair profit, at a cost, including first purchase of the wheat, which will enable them to compete in the objective market at equal prices and sell their stuff. To carry for A at a lower mileage rate than this, or at an equal mileage rate as for B, who is so much further off, would be for the railway to voluntarily relinquish to A a profit which A had done nothing above what B had to earn, and which was not necessary to the transaction. This illustrates what is now causing the agitation at home against the *differential foreign tariff*, which amounts really to a demand for protection and bounty at the expense of the railway companies. The lower mileage charges of the railway companies, combined with the lower prices generally ruling in distant producing districts, enables foreign produce to compete with home produce, but not necessarily to exclude it. The freight can be so arranged as to entirely protect the home producer from a competition that depresses home prices. Obviously it is to the interest of the companies to secure this, as the short traffic pays the highest rates, and the only object of reducing is to insure a full flow of traffic over the whole of their lines, at the highest rates that can be charged in each part. Equal mileage rates tend to restrict the area of competition which rules prices in the markets, and this is not at all in the interest of the consumer. It is also a fact that railways can afford to carry *through traffic* at somewhat diminished charges, which is another reason for quoting reduced rates for larger mileages. It is further very evident that a railway could not carry so cheaply as it does for A near the market, if it could not insure a full traffic over the rest of the line.

On the whole, therefore, we see that a line worked commercially produces the maximum benefit to all concerned at all times, whereas worked on the inelastic state system, the maximum benefit is received not by the *tax-payers* but by the persons financing the large movements of goods, who appropriate the surplus profit arising, above what is merely necessary to admit of transactions, instead of the railway, which alone renders the transactions possible at all, getting them. In this we can perceive certainly one recommendation to capitalists for state railways over those of companies which finds an echo in the chambers of commerce. These can always exercise pressure in reducing state railroad rates, but seldom recommend their being raised in the interest of the tax-payer when excessive profits are being earned from the low rates of freight. We may then notice the commercial limits which should rule the rates of competing railways, and by going below which the lines merely throw away their dividends individually and collectively, and rapidly kill the through traffic, which can only subsist as long as there is a substantial difference in prices to defray freight charges from.

If the state railway agency is not suited to commercial working and we are satisfied that commercial working suits all parties, not overlooking the interest of the tax-payers, then we may view with equanimity the careful launching of more companies by the home authorities, and it would be a good thing to make over those of the state also for the purpose of working. The rate of guarantee has come down to $\frac{3}{4}$ per cent., with no want of investors apparently, and on good lines the surplus may in time become 2 per cent. in addition, while the government *surplus* portion would at the same moment become $2\frac{1}{2}$ per cent. But to attain this we must not interfere with the rates and fares between the authorized margins; we may be sure the best will be done under a commercial system, properly worked, to develop traffic while assisting trade in every way.

The surface argument against guaranteed railway companies seems to be that the moiety of surplus profits absorbed by them is a dead loss to the tax-payer. It has yet to be shown that the earnings on state railways would admit of such high net profits as if the lines were worked commercially. On the face of it there is everything against such a supposition. The inelastic rates and policy tend to exclude traffic when prices are low. The inability to raise rates when prices are high throws surplus revenue, which ought properly to go to extinguish an income-tax and a loss by exchange, into the hands of a few merchants and traders. Without a share of surplus profits railways would exhibit no attraction to the money market. Nor would any attraction be likely to be increased by the knowledge that competing lines are springing up which must very soon cause dividends to dwindle. It will soon become necessary to admit the companies to monopolies of territorial extensions, if the tax-payer is to be protected and the shareholders of Indian railways are spared from a wholesale depreciation of their property from competition of state and other lines in which the government itself is an active agent for regulating rates.—*Indian Railway Service Gazette*.

THE SCRAP HEAP.

Railroad Young Men's Christian Association.

The New York Branch now reports a membership of 600 at the Grand Central Depot and 350 at Thirtieth Street station. The *Monthly Reporter*, published by the Association, says:

"Plans for active work are being matured by the different committees. The Membership Committee has prepared a circular inviting men to join, which will be sent to all employees here.

"The Committee on Religious Meetings have decided to continue the meetings for men only, such as were held with such gratifying results during the last winter. The Bible Class was re-organized on Thursday, Sept. 9, and will be held every Thursday at 12:15. Fifteen minutes will be devoted to a Song Service.

"The Committee on Educational Classes hope to be able to announce the arrangement of classes on or before Oct. 1.

"The Library Committee have just issued an edition of 1,000 copies of the 'Catalogue,' including all supplements, and they desire each member to take books for home reading.

"The Committee for Visitation of the Sick have made quite a large number of visits this year, and they are prepared to do anything in their power for any man who may be sick or injured. *

"The evening entertainments will be begun early in October with a grand concert.

"Among the lecturers who have already accepted our invitation to speak for us are Rev. Henry Baker, D. D., subject to be announced. Mr. J. J. Wilson, 'An Illustrated Talk on Travel.' Mr. W. R. Davenport, President Erie Car Works, subject, 'Chilled Iron Car Wheels.' Mr. Elliott F. Shepard, 'A Talk on the Labor Question.' Rev. J. S. Chadwick, D. D., subject, 'Grumblers and Grumbling.' Prof. Frank Beard, a 'Chalk Talk.' Rev. F. W. Clappett, subject, 'Life of George Stevenson.'

Found on the Track.

While a gang of negroes on a construction train on the Mississippi Valley Railroad was repairing the track about two miles south of Shelby station a panther came from the woods and attacked a negro laborer, springing upon his shoulder. The negro immediately grabbed the panther in his arms and gave him an old-fashioned bear hug, not forgetting at the same time to yell for his life. The panther evidently became more frightened than the negro, changed his tactics and tried to escape, but the negro was too much for him, as he held him until Conductor Caldwell could get his gun and come to his assistance, when Caldwell shot the panther in the negro's arms. General Manager J. M. Edwards came along in his car shortly afterward, took the animal aboard and brought it to this city to-night. It measures 6 ft. from tip to tip and is a ferocious specimen.—*Vicksburg (Miss.) Dispatch*.

A Pass Swindler.

General Manager Bradford Dunham, of the Baltimore & Ohio Railroad, sends us the following memorandum, dated Sept. 23:

"Will you kindly publish the fact that one William H. Waltemyer is now in Missouri and Kansas making fraudulent applications for passes on account of this company. So far he has used the name of Mr. David Lee, General Superintendent of the Main Steam Division; and passes have been requested for 'Capt. O. K. Howard' and 'R. W. Willing.'

"Waltemyer is a man about 42 years of age, 5 ft. 10 in. in height, slender build and a prominent nose, and is a very plausible talker. He was previously arrested for using the name of our former Master of Transportation, Mr. W. M. Clements, and was sent to the Kentucky Penitentiary for two years. If apprehended now, this company is willing to aid in his prosecution."

He Had His Revenge.

The following story is told of the General Traffic Manager of a Southern railroad. Some time ago, as he was returning to New York from the South, the train on which he was riding stopped at Elizabeth, and among the passengers who boarded it was a richly dressed lady, who entered the car in which he sat, and anxiously glanced around for a seat. The train was crowded, and Mr. O—immediately arose and gave the lady his—the outer half of the—seat, and stood in the aisle near by. When Newark was reached, the gentleman who occupied the

other half got out and left the car. The lady at once arose as if to give Mr. O— his portion of the seat, shook out her skirts, seated herself again with her back to the aisle, and put her little hand satchel on the other half of the seat. By this time many of the passengers had become interested in the situation. When the train reached that portion of the meadows between Newark and Jersey City on which the phosphate works are situated, the terrible stench, so familiar to those who habitually travel on the Pennsylvania and the Morris & Essex railroads, penetrated the cars. Quick as thought the lady seized her satchel, got a bottle of smelling salts and clasped it to her nose. Mr. O— saw this, and leaning over he said to a couple of gentlemen in the seat immediately behind her, "Gentlemen, what in the name of heaven has that woman got in that bottle?"

The lady instantly turned and said, "It is not this bottle, sir, which smells."

Amid the universal laughter he retired to another car, but not until he had shot back, "Madam, as long as I live I'll never forget the smell of that bottle."—*Editor's Drawer*, *i. i. Harper's Magazine* for October.

Forgot Something.

On the 12 o'clock train that left New York yesterday a lady with two babies, a bird cage and several packages sat in the last car. When the train neared Stamford the brakeman requested the passengers to go forward to the next car. The lady started with the bird cage and her bundles and took her seat.

After the train started she threw up her arms and exclaimed aloud:

"My babies! my babies!"

As she arose in her seat a very indignant brakeman thrust them in the door, and there was a general roar of laughter from the passengers.—*Banbury News*.

A Faithful Watchman.

A dispatch from New Brunswick, N. J., Sept. 24, says: "While flagging a train last night, Nicholas Doyle, an aged gate-tender on the Pennsylvania Railroad, was struck by another train coming in the opposite direction. He died from his injuries to-day. Doyle has saved perhaps half a dozen lives on the road, and has several times been injured, once meeting with nearly fatal injuries while springing in front of an express train to rescue a girl from death. This was 16 months ago. After his recovery he was given a handsome purse by the company and placed in his last position, an easier one. Doyle leaves a wife and five children, who will be pensioned by the company, while the employees of the road are talking of erecting a monument to the dead man."

He Was Not Moved.

The Illinois Central Railroad Co. bought some land near the Wisconsin border on which an Irishman had a cabin and a three years' lease. The company gave him \$300 for his lease and agreed to move his cabin to any place he might designate. When the workmen appeared to haul away his cabin they asked him where he wanted it placed. "On the banks of Lake Killarney, in Ireland," was the answer. At first he was thought to be joking, but he soon convinced the railroad company that he was in earnest. He still lives on the company's land and keeps the \$300.—*Chicago News*.

Boy Train Wreckers.

The Boston Evening Record of Sept. 28 says: "On Sept. 20 the Record published the facts of a dastardly attempt to wreck the 4:30 p. m. Providence express train on the Boston & Providence Railroad. It will be remembered that the engineer and fireman of the train noticed the obstruction and stopped the train before it reached the obstacle, which proved to be an iron rail, with stones wedged in between the rails.

The spot which was at the rounding of a curve near Clarendon Hills station, was a bad one to have an accident occur. At the time a colored youth was seen loitering about the place and he was taken in custody. He gave the name of Warren Potter, said he was 14 years of age, and his place of residence Boston. At first he denied all knowledge of the affair, but said that he saw six other fellows run away from the place where the obstructions were found. This morning he was arraigned in the West Roxbury district court, and held in \$1,500 to await the action of the Suffolk grand jury. He has made a confession, and says that there were four conspirators with him, but he refuses to tell their names.

"He says that their only reasons for planning the wrecking of the train was to rob the passengers that would be killed, and then he and his rascally companions had contemplated a trip to the West. It is not known whether the officers have any clew as to the identity or whereabouts of the other culprits. Potter is a very cool individual for one so young."

He was Scared.

When the engine attached to the train from the State Fair at Narragansett Park went crashing into the platform in the station Friday night, a passenger seated in the Stonington train standing on the next track heard the great noise, and thinking that the world was coming to an end or that the city had been visited by an earthquake, in his fright gave a mighty leap and went through the car window, carrying with him glass and sash in his flight. He landed safely upon the platform uninjured, and, looking about, took in the situation at a glance. His courage returned as a railroad official asked his name, and he replied: "Never mind my name, I'll settle for the damages," and he did.—*Providence Journal*.

TECHNICAL.

Locomotive Building.

The Brooks Locomotive Works in Dunkirk, N. Y., are busy and are turning out two locomotives a week.

The Baldwin Locomotive Works in Philadelphia are running at the rate of 12 or 13 locomotives a week. Among recent deliveries was a freight engine with 16 by 24-in. cylinders for the extension of the Raleigh & Augusta Air Line.

The Central Vermont management has just closed a contract with the Baldwin Locomotive Works in Philadelphia for 8 locomotives—2 passenger engines, 3 moggies and 3 shunters. Two of the engines are designed for use on the Ogdensburg & Lake Champlain road, one on the New London Northern, one on the Central Vermont proper, and three on the Canada Atlantic.

The Car Shops.

The Central Pacific shops in Sacramento, Cal., are building 200 fruit cars of an improved pattern.

The Barney & Smith Manufacturing Co. in Dayton, O., has recently completed several sleeping cars for the Canadian Pacific road.

The Colorado Coal & Iron Co. will, it is said, shortly add to its works at Pueblo, Col., a car-wheel foundry.

Bridge Notes.

The Philadelphia Bridge Works of Cofrode & Saylor at Pottstown, Pa., are to furnish the iron work for the new Market street bridge over the Schuylkill River in Philadelphia.

Mr. Grant Wilkins, of Atlanta, Ga., has taken the con-

tract for an iron highway bridge over Indian Creek at Covington, Ga. The bridge will be of 115 ft. span, with a roadway 18 ft. wide and a 4-ft. sidewalk.

The Iron Filing Co. has been incorporated in Chicago with a capital stock of \$1,200,000. The object of the company is to manufacture iron substructures for bridges, elevated railroads, etc. The incorporators are Phineas Pease, Charles FitzSimons and Wm. E. Rollo.

The new bridge over the Missouri River on the extension of the Chicago, Milwaukee & St. Paul to Kansas City will consist of four main spans of 400 ft. each. There will be 2,900 ft. of iron trestle and 1,200 ft. of wooden trestle in the east bottoms and 140 ft. of approach on the north bank. Gen. Wm. Sooy Smith, of New York and Chicago, has the contract for the substructure, and the Keystone Bridge Co., of Pittsburgh, is contractor for the superstructure.

Manufacturing and Business.

Blackmer & Post report that the requirements of business have forced them to run their sewer and culvert pipe works in St. Louis day and night. They have accordingly put in an electric light plant of the Edison incandescent pattern with 40 burners, and find the result very satisfactory.

The Tanner & Delaney Engine Co. in Richmond, Va., have recently shipped a pole-road locomotive and 6 cars, a 40-H. P. engine and boiler, and a large saw-mill for the Page Lumber Co., near Raleigh, N. C.; a pole-road locomotive and cars for J. R. Baldwin, Montgomery, Ala.; a very heavy saw-mill and auxiliary attachments, consisting of log turner and bauler, edger, etc., each for the Un'on Lumber Co., and the Cedar Creek Lumber Co., of Ala.; two large boilers for heating a public building at Nashville, Tenn.; two large oil retorts for Wilmington, N. C.; two large boilers for J. R. Johnson & Co., of Richmond, Va., and a number of small engines and boilers to points in Georgia, Florida and Alabama. The shops are now employing 450 men, the largest force ever worked there.

The Western Iron Works Co. in St. Louis is filling an order for a number of water-tanks 20 ft. in diameter and 16 ft. length of stave, with the Pope half-round tongue and groove joint, for the St. Louis, Arkansas & Texas road.

The New York Cable Railroad Construction Co. has been organized in New York with \$200,000 capital stock, to build and equip street railroads to be operated by stationary engines and cables. The incorporators of the company are C. D. Ingersoll, D. Frank Lloyd, Henry L. Stork, Cornelius V. Sidel, William C. Reddy, J. Creighton Webb, Edmund Beardsley, John F. Shelly, and Charles S. Beardsley.

The Union Switch & Signal Co., of Pittsburgh, has bought the old Swissvale Car Works on the Pennsylvania Railroad, near Pittsburgh, including 13 acres of land and three large one-story brick buildings. The Union Switch & Signal Co. will remodel the old buildings and erect new ones and remove its plant thereto, as the present quarters are entirely too small for the rapidly growing business.

Iron and Steel.

Katahdin Furnace, at Katahdin, Me., is in blast again, the repairs having been completed.

The Springfield Iron Co. in Springfield, Ill., has just added to its plant a Long & Allstatter punch with a capacity to punch six holes through 1-in. thick steel splices. This makes it possible to punch at one operation splices for the new three-tie joints, which many leading railroads are adopting, and will make the capacity for punching splice-bars probably the largest in the country.

The Woodward Iron Co. is adding pipe works to its plant at Wheeling, Jefferson County, Ala. They will soon be ready for use.

The Lawrence Iron Works at Ironton, O., have been reorganized, the Lawrence Iron & Steel Co. being the name of the new corporation.

Henderson Furnace at Sharpsville, Pa., went into blast last week. All the Sharpsville furnaces are now running.

The Youngstown Steel Works in Youngstown, O., have shut down, after running a few months.

Franklin Furnace in Columbus, O., went into blast recently.

Sarah Furnace near Ironton, O., is in blast and running steadily. The fuel used is coke, with a mixture of about one-fourth coal from local mines.

The Rail Market.

Steel Rails.—The market is steady, with quotations at \$34 per ton at eastern mills for large orders and \$34.50@\$35 for small lots. Some inquiry is reported for light rails, which are quoted at \$37@\$42, according to section.

Rail Fastenings.—A fair demand is reported, with quotations steady at 2.40 cents per lb. for spikes in Pittsburgh; 2.75@\$3 for track-bolts, and 1.70@\$1.75 for splice-bars.

Old Rails.—The demand for old iron rails is more active, with fair supply, and quotations are \$20@\$22 per ton at tidewater. Old steel rails are quoted at \$21@\$23 per ton in Pittsburgh.

The Hinkley Locomotive Works.

The Hinkley Locomotive Works in Boston, which shut down during the dull times and low prices, are to be reopened under the general management of Mr. W. E. Barrows (formerly President of the Willimantic Mill Co., late Assistant to the President of Pullman's Palace Car Co., and more recently General Manager of the Dickson Manufacturing Co., at Scranton, Pa.). After Oct. 1 these works will be prepared to execute new orders for locomotives and to do repairing of all kinds. They will also be prepared to do general machine work, and to furnish castings, forgings, boilers, etc., for locomotive and other work.

Sight-Feed Lubricators.

The Seibert Cylinder Oil Cut Co., of which Mr. Max Nathan of New York, is President, and Mr. Chas. W. Sherburne, of Boston, is Treasurer, announces, under date of Sept. 18, that, "Having this day purchased from the Nathan Manufacturing Co. its business in sight-feed lubricators for railroad use, we have established an office at 94 Liberty street, New York, and are prepared to furnish all the various styles of railroad lubricators made by the said Nathan Manufacturing Co., and heretofore sold by the same."

A Locomotive Boiler Explosion.

The somewhat unusual accident of the explosion of a locomotive boiler while the train was running at full speed is described as follows by the Baltimore Sun of Sept. 27:

"The Baltimore & Ohio's St. Louis and Chicago Express, which left Philadelphia over the new line at 5 p. m. yesterday, and was due at Camden Station at 8:22, met with an accident about 8 o'clock near Third street, Canton, Baltimore County, by which five persons (three trainmen and two passengers) were injured.

"The accident was caused by the explosion of the boiler of the locomotive. The train was composed of a baggage car, smoker, coach, two sleepers and a dining car. Supper had been eaten in the dining car and the passengers had returned to their seats when there was a tremendous explosion, a sudden concussion and an abrupt stoppage of the train. The boiler exploded backwards and the concussion was caused by the momentum of the heavy rear cars. The smoker and the coach being caught between the backward and forward mo-

tions were telescoped. The passengers were jolted from their seats and shaken up with a suddenness that made many of them think there had been another earthquake. The women screamed and the men bolted for the doors. Some of the men had their skins skinned and their hands scratched in the scramble, but as they were quickly assured by the officers on the train that all the danger was over, they returned to the cars to give the same assurance to the people inside, who had not tried to get out. The ladies recovered from their excitement very soon and proffered their assistance to the wounded.

The passengers in the smoker and coach had the brunt of the shock, but with the exception of the persons mentioned nobody on the train was hurt bad enough to require particular mention.

The locomotive was blown all to pieces, and its truck topped over on another track and blockaded the movements of other trains. At the moment of the explosion a shower of sparks flew up in one direction and a shower of water in another. The sparks made a bright light, and in coming down resembled the descent of fireworks. The water descended upon the tops of the cars and gave a second fright to many of the passengers.

"The explosion was caused, it was supposed, either by a lack of sufficient water in the boiler or by defective iron in the boiler. The locomotive was known as No. 762, and was of the Wootton improved pattern, and built by the Baldwin Locomotive Works. It had not been in use over a month, and cost about \$8,000.

"When the Sun reporter visited the scene of the wreck last night a large force of men, under the direction of General Manager Dunham, were at work clearing the track. The locomotive was as completely destroyed as if it had run into another engine at the rate of 60 miles an hour. It had fallen over to the left, covering the track on which it was running, and the east-bound track with the wreckage. The head piece of the boiler had been blown out and lay 100 yards down the track. To the right of the track were the wheels and trucks of the engine and numerous other pieces of the engine. The fire-box was ripped open, and looked like an immense sheet of iron slightly curved. The cab of the locomotive was nothing more than kindling wood. From the general destruction wrought to this immense engine, the escape of anybody on it or even in its vicinity from instant death appeared little less than a miracle. The tender of the locomotive was forced to the right, and partly crushed between the wreck and the forward end of the baggage car. The baggage car had left the front trucks and run partly up on to the tender. Back of the baggage car came the smoker, the front end of which, while jammed into the rear end of the baggage car, did not appear to be much damaged.

"The most damage to the smoker, and in fact to any of the cars, was at the rear end. The first-class passenger coach following had telescoped about five feet into the rear end of the smoker, forcing it entirely off the trucks, going through the platform and crushing some of the rear seats into an indistinguishable mass."

The Basic Steel Process.

As our readers know, for nearly seven years there has been litigation pending between Jacob Rees, the inventor of the basic steel process, and the Bessemer Steel Co., limited, which has prevented the use of Rees's invention in the United States, owing to an injunction obtained by the Bessemer Co. In Pittsburgh, Sept. 10, the Master in the case decided that the injunction shall be dissolved and the bill be dismissed at the cost of the Bessemer Steel Co. It is thought that the latter will appeal the case to the Supreme Court.

Compressed Air Locomotives.

The Calumet & Hecla Mining Co. in its extensive copper mines in the Lake Superior Region, is introducing compressed air as motive power for propelling tram cars. Experiments are now in progress with several small locomotives, which have been built for this purpose, and which, if perfected, will do away almost entirely with tramming by man power.

Steel Ties in Mexico.

Superintendent Foot, of the Mexican Railway, says that 20,000 steel ties have been laid between Vera Cruz and Mexico since 1883, and 40,000 have been ordered for this year, and it is proposed to lay 40,000 to 50,000 yearly hereafter. He puts in 2,000 per mile, brought from England, where they cost about 5 shillings each, and delivered on the road not more than \$2 in Mexican silver. The wooden ties used cost 90 cents to \$1.62 each.

Iron Roofing for Jerusalem.

The Cincinnati Corrugating Co. in Cincinnati recently made a large shipment of its corrugated iron siding to the ancient and sacred city of Jerusalem for use there.

Odd Railroad Gauges.

H. K. Porter & Co. in Pittsburgh, builders of light locomotives, say that their books record the construction of locomotives for no less than 57 different gauges. Besides all the usual gauges this includes a number of odd ones, such as 21½ in., 37 in., etc., etc. It is to be remembered, however, that a large number of these engines were for mines, furnaces, mills and logging railroads, where all sorts of considerations may lead to the adoption of a gauge. A number of them also have gone to foreign countries where the metrical system is in use, causing a still further variety.

The most curious reason for the adoption of a gauge which has ever come under the writer's observation was on a little road about 2½ miles long, which was built to carry limestone from a quarry to the kilns. This was 34½ in. in gauge, and when the owner was asked the reason for adopting this odd gauge, he said that among a lot of old scrap which had come into his possession he found three track-gauges, which he used in laying the track on his road. The cars were made to suit, and when, in course of time, business increased and steam was substituted for mules as motive power, the locomotive was ordered to suit the gauge.

Cleaning Greasy Tracing Cloth.

Engineering News contains the following suggestions to this end:

"1. Take any clean waste paper, an old newspaper, for example, and after crumpling it in the hands, rub the entire surface of the cloth with it: the paper works best when crumpled up, and the cloth should not be rubbed to hard.

"2. Rub the stretched cloth gently with what is called 'marble dust,' to be obtained at any marble sawing yard, and brush off all loose dust with a soft cloth.

"3. Use as above ordinary 'face powder,' such as comes in cakes, and is best applied to the tracing cloth by hand. Powdered magnesia will also work well, as the principle is the same in all of using a material that will absorb grease and at the same time slightly reduce the excessive polish of the surface of the cloth."

To which we would add, as the best of all methods ordinarily:

"4. Use dull-back tracing cloth, *working on the dull sides*.

Or, if for any reason that is objectionable:

"5. Put a drop of ox-gall in the ink."



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particularly as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN OPINIONS, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

HEAVY BRIDGES AND ECONOMY.

As the men who buy and use bridges, and not those who build them, are really the most concerned in having them strong enough, it perhaps will not be amiss to continue our discussion of "Good Practice in Bridge Buying" in our issue of Sept. 17, by showing somewhat more fully, first, why the present practice is evil, and secondly, what would be good practice. That a clearer understanding of the facts is often effectual in causing a change of practice among those who have authority to decide about bridges, but who do not pretend to understand them technically, was shown strikingly in a very large recent contract which we might mention, where the load stipulated was increased almost 20 per cent. on the recommendation of an engineer, against a previous decision.

The all but universal practice up to the present time—with the best engineers and most careful corporations, as well as the worst and least careful—has been to build bridges to carry a rolling load just a little greater than it was expected to be immediately necessary to pass over it. This was conspicuously and absurdly illustrated in the Niagara Falls cantilever bridge, where a structure which was to be used by several companies and might be used by as many more, and which might be expected, if any could, to be strictly first-class and to stand up for all time under a rolling load as heavy as there was any immediate possibility at least of coming upon it, was specified to be proportioned for two ordinary Mogul engines and a rolling load of only 2,000 lbs. per foot, which latter limit, in all probability, is exceeded every day even now. The trains which are habitually run on every other trunk line in the country but the New York Central would be unsafe to pass over the bridge if they chanced to be headed by two engines, and except for the fact that the consciences of the contractors—under all the circumstances—were unequal to the strain of putting up the bridge as light as the specifications permitted, would be unsafe even for one engine. Actually the floor system was proportioned for Consolidation engines, so that, as one account delicately puts it, "in practice and under ordinary circumstances," i. e., with any one Consolidation, the bridge will be safe for them. Instances without number exist of similar specifications for structures on which soon after it was desired to carry heavier loads. For example, the Cincinnati Southern, which was peculiarly "an engineers' road," and the construction of which was as cautiously and skillfully conducted as any in the country, set the fashion in 1875 of proportioning bridges for a rolling load of two Mogul engines and 1,820 lbs. per foot. The road was only opened in 1880, and it came under consideration almost immediately to use Consolidation engines, which have long since been in use on it, and doubtless heavier car loads as well. If not, it will only be a matter of a very short time when it will be at least desired to exceed it materially. How the difficulty as to strength of bridges has been overcome, we cannot say.

What has been the consequence of this very general sailing so close to the wind? Simply this, that all over the country, bridges that ought to be just beginnin

their normal life are being taken out by the hundreds as too weak. The Pennsylvania Railroad, which is one of the last roads one would expect to be at fault in the matter, for it defers more than almost any other to scientific advice, is taking out its old bridges by the dozens and saving itself further trouble in renewing them by using stone wherever possible; yet there is no question that stone is far more costly than an iron bridge which shall *certainly* be amply strong for all possible requirements. Interesting testimony to this effect was borne by Mr. Jos. M. Wilson, late Engineer of Bridges and Buildings of the Pennsylvania Railroad, whose large experience entitles such an opinion to great weight, in his paper from which we have quoted:

"The great point in favor of stone bridges, and really their saving clause, has been their great excess of strength. Those who favor stone bridges say: 'O, yes, they cost more money than iron bridges, but they are so much more permanent.' I say, put the same excess of material in your iron bridges, or rather the same excess of cost, and you will have a structure much better adapted to resist travel, time and the elements than you have in a stone bridge. I have never been in favor of stone bridges of any size for railroad traffic, particularly in our climate. The material, from its brittle, crumbling nature, is very ill adapted to resist the action of variable loads, impacts, etc., and where a frost can enter, it slowly but surely does its work."

The great difficulty, it seems clear, is that the very trifling addition which is made to the cost of a bridge by making it amply strong has not been understood by the bridge-buying public, nor probably in any clear way by a large majority of engineers. We hope the fact presented in our issue of Sept. 17 will do something to make that fact at least clear and generally known. But however little it costs to get stronger bridges, it costs something, and before it can be expected that any large number of railroad men will incur that cost, it must be shown not only that it is profitable, but that it is on the whole largely profitable.

For it must be admitted that the investment, however small, yields little, if any, direct return for some years at least, and compound interest has an unpleasant way of creeping up; nor are railroad officers in general wildly anxious to find investments at compound interest for surplus funds, however profitable. "After us, the deluge;" a little larger dividends are more immediately gratifying to all parties. It is this, beyond question, which is the chief obstacle in the way of burnettizing ties more generally; and in many details of construction there is, because of it, no attempt at betterments which will only become of probable utility in the distant future. If we start to-day with \$1, we shall have at compound interest:

		At 4 per cent.	At 6 per cent.
At the end of	10 years	\$1.48	\$1.79
"	20 "	2.19	3.21
"	30 "	3.24	5.74
"	40 "	4.80	10.29
"	50 "	7.11	18.42
"	100 "	50.50	339.30
"	200 "	2,550.69	11,513.20

Beyond these limits we jump into millions at once.

The practical question for the railroad officer is, therefore, "Supposing I make this investment, what will I make out of the extra strength in my bridges?"—the most direct answer to which is, that it will at least save the all but certainty that the bridge will have to be renewed within a brief period of years as being too weak, for that this will be the end of a large majority of the bridges under the now usual specifications is beyond question. It is only a question of time.

To answer the above question fully, for all causes, we give below a brief table showing the number of years that renewal must be postponed before a given increase of cost to save the necessity of future renewal becomes a losing investment, and the table clearly shows that it is unmistakably bad economy, in the small structures especially, to run the chance of renewing within less than 50 years at least.

Table showing the years which a Bridge must outlast to make the increase of cost in the first column a losing investment as respects saving the necessity of renewal, with cost of capital, etc.

Inc. per cent. in cost of bridge.	Inc. per cent. in weight of bridge.	Approximate corresponding inc. in permiss- ible rolling load for span of 50 ft. 200 ft.	INTEREST AT			
			4 per cent.	6 per cent.	8 per cent.	10 per cent.
1.0	2.0	P. c.	Years.	Years.	Years.	Years.
2.0	4.0	8	3	17.4	79.0	59.8
3.0	6.0	16	6	48.1	47.2	46.3
4.0	8.0	34	12	23.6	23.1	22.7
5.0	10.0	50	20	16.0	15.7	15.4
6.0	12.0	68	34	12.0	11.8	11.6
7.0	14.0	86	50	9.6	9.4	9.3
8.0	16.0	104	66	8.0	7.9	7.6
9.0	18.0	122	82	6.8	6.7	6.4
10.0	20.0	140	98	5.6	5.5	5.1
11.0	22.0	158	114	4.5	4.4	4.0
12.0	24.0	176	130	3.5	3.4	3.0
13.0	26.0	194	146	2.6	2.5	2.1
14.0	28.0	212	162	1.8	1.7	1.3
15.0	30.0	230	178	1.2	1.1	0.8

Formula: $I (1+r)^n = 100$.

$$\log \frac{100}{I} = n \log (1+r)$$

Whence $\log n = \log \frac{100}{I} - \log \log (1+r)$.

In which I = increase per cent. in weight of bridge; r = rate of interest on capital, n = required number of years before the additional cost of the extra weight will amount to the cost of a new bridge (or 100), assuming weight and cost to be in direct ratio to each other.

In computing the table, we have assumed that the cost per pound of adding a small per cent., more or less, to a bridge is only about half the average cost, for reasons we gave in detail in our former article. Only the cost of raw material and transportation increases with the weight. The shop work, administration expenses and erection are much the same. It is probable that competition would enable companies which insisted on the extra weight to get it at about that cost. We have then placed opposite the increase in weight a rude average from the data already given to the corresponding increase in strength, which was intended to be an under rather than an over estimate, for two different spans. It will be seen that the gain in strength for a given increase in weight is much less for long spans, as is but natural. The years before the extra weight will become a losing investment for saving renewal were then determined by the formula given below the table.

If the only gain from the extra strength were to save the danger of renewal, the investment might not be so tempting, although it could hardly be a losing one at the most, but it must be remembered that not only is there a good chance that greater strength will be needed almost as soon as the bridge is up, but there is a constant element of danger. It is not a great one. The number of iron bridge accidents is gratifyingly small, and the class of men who design railroad bridges are almost invariably skillful men who do not willingly take serious changes, and who will not leave behind them any especially weak points. Nevertheless, we should not forget that the worst accident which ever happened in this country was the fall of an iron bridge which—whatever its undoubted defects, which are not now repeated—had been strong enough to carry a heavy traffic for 13 years, and had the last straw laid on it by a storm. Heavy winds, trains off the track, gradually increasing flaws, and such like causes are liable to happen at any moment to any bridge. At such times a very slight margin of strength becomes of immense importance—and there is now none. The truth is that, with all the attempted exactitude in computing bridge strains, no true exactitude is possible; in proof of which, there is probably not a reputable bridge-builder in this country who could be induced by any consideration to put up a bridge which he knew would be subjected to the rolling loads for which it is proportioned with 20 per cent., or even 10 per cent., less sections than are usual; and yet nominally the limit of elasticity is from 200 to 500 per cent. in excess of the actual strains. If 20 per cent. could be suddenly taken off the sections of all the iron bridges in the United States to-day, we should probably be appalled almost weekly by distressing disasters.

The apparent ample margin of strength, therefore, which has no doubt gratified many railroad officers as they read over a bridge-builder's specifications, is really utterly delusive; only the merest fraction of it exists. The nominal excess is only a factor of ignorance to allow for the incomputable; such as the effect of vibration, not only to increase the strains but to deteriorate the material; the dynamic or concussive strain which comes on a bridge from its own settlement in addition to the dead strains resisted; and the effect of the counter weights of the locomotive to increase strain—a very important element the effect of which was shown in an interesting and impressive way in the diagrams of vibration of bridges given in our issue of June 25, 1886. When to these are added the direct effect of gales of wind, of derailed or flat wheels, of exceptional or unauthorized loads and of the demonstrated fact that iron over-strained or subjected to much vibration gradually deteriorates, it is as certain as anything in the future can be that besides the loss of millions from renewals of comparatively new bridges which have been made too weak, we shall be called upon to regret serious bridge catastrophes at intervals of five or ten years, the cause for which can be directly traced to saving a petty percentage of metal in the beginning.

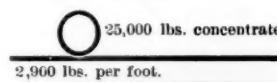
To save this danger it is certainly not too much to expect that bridge-buyers shall require their bridges to be amply strong if there is even a reasonable chance that they will make money by it as well, and we have seen that there is far more than that.

In respect to the question—what is the most judicious way of securing such bridges, we showed in our issue of Sept. 17 that the engine load and car load have now approximated very closely to each other, as shown in the following table, which gives the four classes of loads for which Mr. Pegram framed his general formulae:

	Lbs. per ft.	Avg.
Typ. Cons'n	344,000 lbs. on 105 ft.	3,276
Consolidation	322,680 " 103 1/2 "	3,118
Mogul	276,000 " 100 "	2,760
Narrow G.	200,000 " 90 "	2,200

Whether the assumed car load be much or little has comparatively little effect on the weight of a bridge, and as 3,000 lbs. per foot is now as low as there is any reasonable prudence in assuming for some years ahead, and as more than two engines together frequently pass over a bridge, or have occasion to, there is no longer any occasion for perpetuating the distinction between engine and car load. A uniform load per foot of something like 3,300 lbs. will tend both to simplicity and good practice. With the separate car load should be swept away that—now, at least—ridiculous practice of setting up a certain imaginary locomotive and tender of maximum weight with imaginary loads on imaginary wheels at imaginary distances apart, and then assuming that these are the greatest loads and the most disadvantageous distribution which will ever come on the bridge. It is far more likely to make a bridge entirely safe for all possible kinds of wheel-bases which may come upon it, to assume a concentrated load at the head of the train, without any attempt to space off the wheels and the load on each, and the more complex method has been enabled to obtain and maintain its footing largely for one reason, that it enables the last ounce of material to be saved while yet holding up to a higher nominal margin of safety for that one particular engine than would otherwise be possible with the same amount of material. In part, no doubt, it arose from the worthier motive of making "each part as strong as the rest," even if there were some elements of uncertainty; but that this end is not very effectually accomplished is shown in the fact that long ago it was found necessary to stipulate two different types of engine wheel-bases and the Pennsylvania Railroad has for some years stipulated three; in spite of which liberal assortment it has now a lot of engines at Altoona which it cannot run over the road because the bridges are too weak; which seems almost in itself a sufficient commentary on the merits of the plan. That it tends to make the bridges any better is demonstrably untrue but to the bridge manufacturer every surplus pound of iron is naturally a source of solicitude, for those little differences affect the price paid for the bridge but little and the profits enormously.

In what has been said as to rolling load, we are but following the position taken by Mr. George H. Pegram in his discussion of Mr. Wilson's paper, where he shows that the following loading gives strains on all members practically equivalent to the maximum strains from the three different engine wheel-bases, which have to be calculated under the Pennsylvania specification:



These loads are to be combined in such way as to give the maximum strains in all parts, but this loading has already become inadequate to the Pennsylvania requirements, as we have noted, and may be counted on with reasonable certainty to prove too light for all roads within twenty years. What precise substitutes should be adopted we will not attempt to say, but certainly 3,300 lbs. and 30,000 lbs. would be none too heavy to give railroads what they ought to want and can have for a most trifling increase of cost and very often at none at all—a bridge which will be absolutely safe against deterioration under any loads which they can wish to throw upon it for 30 or 40 years at least.

VARYING PERCENTAGES IN POOLS.

Whenever the traffic from a number of places in an extended territory is put into a single pool, or all kinds of traffic from a single place, it is almost inevitable that at times the traffic will go to the different lines in very different proportions from the percentages agreed upon or awarded, though these latter may be based on the traffic actually carried for a long period, and though there may have been no change whatever in the facilities of the roads or their popularity—though each road holds all its old shippers and the new ones are distributed in the former proportions. While two roads may, on the average, have the same amount of traffic from a common point or a great territory from which both carry, it is never the case that they have the same amount at all places and of all kinds of freight. Taking the trunk line east-bound traffic, for instance, we find that a business is divided which originates over the whole immense territory west of Buffalo and Pittsburgh. One line gets, say, a fourth of the whole, having carried something like that for a number of years. But of course the New York Central has never carried a fourth—or any part worth mentioning—of the freight which originates at way stations on the Pennsylvania's vast system of

lines west of Pittsburgh, nor does the Pennsylvania have such a share of that coming from similar places on the Michigan Central and the Lake Shore, all of which, if it goes further east than Buffalo or Pittsburgh, is included in the trunk-line pool. And when we come to the great Western traffic centres, from which the larger part of the through traffic comes, although every line gets some traffic from every place, the shipments of different places are very differently distributed. The trunk-line railroad which commands 15 per cent. of the Chicago shipments may get but 5 per cent. of the St. Louis shipments, and one which ordinarily gets but 8 or 10 per cent. of the Chicago shipments may get 30 or 40 per cent. of the Cincinnati shipments. We should expect the Pennsylvania to get very little from Detroit, and the Grand Trunk about as little from Columbus or Cincinnati.

Now, the traffic of these places does not always increase and decrease alike. In one year or at one season Chicago may ship ten times as much as St. Louis; at another, only five times as much. Thus two railroads, while all the time taking the same percentages from the different places, will have varying percentages of the aggregate traffic from all the places.

To make a simple case for illustration: suppose two places, A and B, whose average shipments are 100,000 tons each, to be served by two railroads, one of which gets on the average 75 per cent. of the A shipments and 25 per cent. of the B shipments, while the other gets 75 per cent. of the B and 25 of the A shipments so that either, *on the average*, gets as much as the other. They agree to divide the aggregate business of the two places equally. In some year when the crops fail in one locality and are bountiful in another, A has but 50,000 tons to ship, while B has 150,000. The shipments from each place go to the two roads in the same proportions as before, so that one gets 75 per cent. of 150,000 = 112,500, and 25 per cent. of 50,000 = 12,500, or 125,000 in all, while the other gets 75 per cent. of 50,000 = 37,500 and 25 per cent. of 150,000 = 37,500, or only 75,000 tons in all, and has to be paid for 25,000 tons by its associate.

Several times there has been a failure of the spring wheat crop when the winter wheat crop was good, and *vice versa*. When there is plenty of winter wheat to ship, and not much spring wheat, then those trunk lines whose connections are most complete in the southern half or two-thirds of Ohio, Indiana and Illinois are likely to have a great deal of wheat to carry, especially in July and August, while the lines which have a smaller share of the traffic there and a larger one further north may be carrying very little. Just the contrary is true when the spring wheat crop is heavy and the winter wheat crop light, the heavy movement coming, however, in the fall months instead of July and August.

But this is not all. It is commonly the case that one railroad carries a much larger share of one kind of freight than of another from the same place. At Chicago a few lines carry a very much larger proportion of the provisions than of the grain shipments, and some lines carry a great deal of flour and little grain. A change in the quantities of one of these, when there is no change in the others, must change the percentages of the total shipments carried by the different roads. This year, for instance, especially since navigation opened, the shipments of grain by rail from Chicago have been extraordinarily small, but the flour and provision shipments have been well maintained. This tends to give the lines which are the chief flour and provision carriers a decidedly larger share of the total shipments than they have had on the average heretofore, or are likely to have hereafter, when rail grain shipments are resumed.

By making a great number of little pools, this effect could be prevented; but if the pools are reasonably permanent and effective, and the percentages near to the actual averages of a series of years, it is better not to prevent it. The road short at one season or in one year only receives what it will pay out when the conditions are reversed, as they are sure to be some time, and the general effect is that the co-operating roads provide a system of mutual insurance against certain inevitable temporary vicissitudes of traffic.

Doubtless those who for reasons such as the above are "over" in their percentages, and have considerable balances to pay, would find more consolation in this view of the matter if they felt assured of the permanence of the agreement by which they are required to pay now. Doubtless they are benefited to the extent of many times the amounts of their payments by the better maintenance of rates, but they sometimes get impatient because they do the paying while others as well as themselves get the benefit of the better rates. But unless all business and the business of all places grows alike, percentages carried must vary, and those who carry

more than their share now are simply those whom the fluctuations in traffic have favored first—that is, if their shares are proper ones. And the result of no one season can prove that they are not fair, unless it is an average season for all traffic and all places. Some one line is sure to be ahead every year.

Trunk Line Shipments to the West in August.

Trunk line through shipments west for the month of August, including all from New York, Boston, a large number of interior New England points, Philadelphia and Baltimore, have been in August for seven years:

1880.	1881.	1882.	1883.	1884.	1885.	1886.
172,086	219,092	208,166	192,520	179,181	186,580	183,859

Thus the shipments this year were slightly less than last year, and considerably less than in any other year except 1880 and 1884. Last year the rates were about 45 per cent. less than this year, and for the railroads to have carried as much as then indicates decidedly larger total shipments, as with the higher rates much more goes by canal and considerably (from New York) by the indirect routes (*via* New London and the Chesapeake & Ohio, and by the Lehigh Valley)—more than one-tenth of the New York shipments sometimes going by these routes when the other lines maintain rates and circumstances are otherwise favorable to them, while very much more goes by canal.

But while the comparison with last year is sufficiently favorable, it is noticeable that, taking the whole period, there had not been any growth in this traffic. In 1882 or 1883, when rates were maintained, the shipments were much larger than they were this year. In 1881, the shipments were greatly stimulated by a reduction of about 30 per cent. in the rates made Aug. 6.

That there was considerable traffic diverted from the canal last year that has gone back to it this year is indicated by the fact that while there was a decrease of 5% in the trunk-line shipments from New York, there was an increase of 7 per cent. in those from Boston, Philadelphia and Baltimore. The New York shipments by all routes probably increased as much as those of the other cities.

The August shipments are usually much larger than the July shipments, and this year the excess in August over July was much larger than last year, and also larger than in 1884, but less than in previous years. The merchants' statements as to improvement in business are likely to be much affected by the change from one month to another, so that a gain of 20 per cent. from July to August would be called a great improvement in business, though the August shipments were less than in previous years. Now the shipments in July and August, and the increase in August over the previous July, have been, in tons:

Years.	July.	August.	More in Aug.	
			Tons.	P. c.
1880	147,280	172,086	24,797	17.0
1881	148,461	219,092	70,632	47.5
1882	143,307	208,166	64,859	45.3
1883	156,850	192,520	35,679	22.7
1884	159,481	179,181	19,700	12.3
1885	173,375	186,580	13,205	7.6
1886	157,673	183,859	26,184	16.6

In 1880, when trade was very good the entire year, the increase in August over July was very much like what it has been this year; but in the next two years it was very much greater.

For the eight months ending with August these through trunk-line shipments westward have been for seven years, in tons:

Year.	Tons.	Year.	Tons.	
			Tons.	Year.
1880	1,296,391	1884	1,328,706	
1881	1,297,508	1885	1,323,354	
1882	1,063,483	1886	1,257,334	
1883	1,272,338			

Thus the shipments this year were 5 per cent. less than last year and less than in any other year of the seven, though they were largely exceeded only in 1882. The comparison with last year is very favorable considering the great difference in rates, but what we said above of the August shipments is emphatically true of these: they do not increase. In fact, with the exception of 1882 they have been remarkably uniform. But the country has not stopped growing. There are now about one-fifth more people in the country than there were in 1880, and the rate of increase in the country to which these trunk line shipments go, namely, west of their western termini—Buffalo, Pittsburgh, etc.—has been greater than farther east. Yet it apparently takes no more goods from the seaboard cities than it did five years ago. It must consume more, and we are forced to the conclusion that it is getting a much larger share of its supplies (chiefly manufactured goods) from interior points in this country, just as it has been marketing a larger part of its produce at these interior points, as we shall show hereafter in discussing the course of the national export trade.

The earnings from the through trunk shipments westward in August must have been about 70 per cent. more this year than last, and were exceeded only in 1882 and

1883; but for the eight months the earnings must have been larger in every year except 1882 and last year, the rates having been as high as this year in seven months of the eight in 1881. This year the gross earnings of the eastern trunk lines for carrying this freight must have been something like \$4,700,000; last year, not more than \$3,075,000.

The September shipments have certainly been much less this year than last, but they have been quite satisfactory nevertheless. Last year they were extraordinarily large, the result of a decided revival of trade and the knowledge that the very low rates would be advanced after the close of the month. Rates, apparently, are quite well maintained.

August Accidents.

Our record of train accidents in August, given on another page, contains brief accounts of 52 collisions, 49 derailments and 14 other accidents; a total of 115 accidents, in which 31 persons were killed and 117 injured.

As compared with August, 1885, there was an increase of 23 accidents, but a decrease of 6 in the number of persons killed, and of 55 in the number injured.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Broken rail.	3
Broken frog.	1
Broken switch-rod.	1
Broken bridge.	2
Spreading of rails.	4
Broken wheel.	5
Broken axle.	5
Broken truck.	1
Accidental obstruction.	4
Cattle on track.	3
Land-slide.	1
Wash out.	1
Earthquake.	3
Misplaced switch.	1
Rail removed for repairs.	1
Malicious obstruction.	1
Purposely misplaced switch.	3
Unexplained.	5
Total.	
OTHER ACCIDENTS:	49
Boiler explosions.	4
Flue collapsed.	2
Broken parallel rod.	4
Broken coupling.	1
Runaway train.	1
Bridge-beam falling on track.	1
Car burned while running.	1
Total number of accidents.	

Nine collisions were caused by trains breaking in two; four by misplaced switches; three by mistakes in orders or failure to obey them; two by failure to use signals, and one by a car left on the main track for convenience in loading. It is probable that several more should be charged to failure to use signals.

One of the broken bridges was a composite truss bridge of wood and iron, built for a narrow gauge road which was originally equipped with very light rolling stock. It seems probable that its failure was due to continued overstraining by the use of engines and cars very much heavier than those contemplated when the road was built. It is not unlikely that the same condition of affairs may be found on other narrow-gauge roads, and this case may serve as a warning.

A general classification of these accidents is made as follows:

	Collisions.	Derailments.	Other.	Total.
Defects of road.	11	11	11	33
Defects of equipment.	9	11	12	32
Negligence in operating.	42	4	46	
Unforeseen obstructions.	1	14	2	17
Maliciously caused.	4	5	4	
Unexplained.	5	5	5	
Total.	52	49	14	115

Negligence in operating is thus charged with 40 per cent. of the total number of accidents; defects of equipment with 27.8 and defects of road with 9.6 per cent.

A division according to classes of trains and accidents is as follows:

	Collisions.	Derailments.	Other.	Total.
To passenger trains.	8	18	7	33
To a pass. and a freight.	14	11	11	36
To freight trains.	30	31	7	68
Total.	52	49	14	115

This shows accidents to a total of 167 trains, of which 55 (32.9 per cent.) were passenger trains and 112 (67.1 per cent.) were freight trains.

Of the total number of accidents 63 are recorded as happening in daylight and 52 at night. This is an unusually large proportion of night accidents.

The number of casualties resulting from the different classes of accidents was as follows:

	Killed.	Injured.	Total.
In 52 collisions.	15	32	47
In 49 derailments.	7	67	74
In 14 other accidents.	9	18	27
Total, 115 accidents.	31	117	148

Twenty accidents in all—10 collisions, 6 derailments and 4 other accidents—caused the death of one or more persons each; 30 in all—9 collisions, 17 derailments and 4 other accidents—caused injury, but not death. This leaves 63 accidents—33 collisions, 26 derailments and 6 others—being 56.9 per cent. of the whole number, in which there was no injury to persons serious enough for record.

The killed and injured persons were divided as follows:

	Killed.	Injured.	Total.
Employés.	25	57	82
Other persons.	6	60	66
Total.	31	117	148
Per cent. of employés.	80.6	48.7	55.4

The "other persons" killed and injured were, of course, chiefly passengers, but under this head are included also those who may be called unauthorized passengers, generally described in letters and dispatches as "tramps stealing a ride." This class seems to have been unusually numerous last month. They generally assume considerable risk in getting on trains, and suffer in corresponding proportion in accidents.

Perhaps the most marked feature of the month's record is the large number of collisions. From these several striking examples of careless management might be selected, some of which have already been commented on at some length in our columns.

Another feature of the month was the remarkable number of boiler explosions. These accidents are most frequent in the winter months, and are not numerous at any time, and to have four of them recorded in one month is very unusual, if not unprecedented.

Earthquake appears in our record as a cause of accident for the first time—and possibly for the last also. In view of all the circumstances, it is, perhaps, singular that only three accidents from that cause are recorded, especially as, from their strangeness, all such accidents would surely be noted and reported at once.

For the year ending with August the record is as follows:

	Accidents.	Killed.	Injured.
September.	91	25	98
October.	123	31	134
November.	96	19	118
December.	74	31	153
January.	94	40	90
February.	98	21	157
March.	81	49	131
April.	66	23	105
May.	93	23	170
June.	75	33	86
July.	31	23	88
August.	115	31	117
Total.	1,097	354	1,447
Total, same months, 1884-85.	1,239	327	1,610
1883-84.	1,351	411	1,942
1882-83.	1,636	466	1,754

The yearly average for the four years was 1,331 accidents, 390 killed and 1,988 hurt. The monthly average for last year was 91 accidents, 30 killed and 121 injured.

The averages per day for the month were 3.71 accidents, 1.00 killed and 3.77 hurt; for the year they were 3.01 accidents, 0.97 killed and 3.96 injured.

The average casualties per accident were, for the month, 0.270 killed and 1.017 hurt; for the year, 0.323 killed and 1.319 injured.

The month was thus considerably above the average of the year in number of accidents; close to it in the number killed, and somewhat below in the number injured.

Erie Earnings in August.

The most noticeable feature in the August report of the New York, Lake Erie & Western Company is the large increase in working expenses, which were the largest in any month since December, 1883. The gross earnings were the largest since September, 1884, but the whole increase in working expenses cannot be due to larger traffic, and is probably because of larger expenditures than usual for renewals, which is a good sign altogether.

For nine successive years the gross and net earnings and working expenses of the Erie proper in August have been:

	Gross earnings.	Expenses.	Net earnings.
1878.	\$1,445,929	\$876,125	\$569,803
1879.	1,450,223	858,986	591,237
1880.	1,606,872	957,685	649,187
1881.	1,772,895	1,095,54	677,371
1882.	1,843,144	1,095,067	748,077
1883.	2,068,484	1,099,943	968,521
1884.	1,534,427	913,193	621,234
1885.	1,437,348	909,390	527,958
1886.	1,659,119	1,101,421	557,698

Thus the gross earnings were exceeded only in the three years from 1881 to 1883, but the working expenses being larger than ever before in August, the net earnings were less this year than in any other except last year. Compared with last year the increases are:

	Gross earn.	Expenses.	Net earn.
Amount.	\$21,771	\$192,031	\$29,740
Per cent.	15 4	21.1	5.6

The gain in gross earnings was the smallest since April, but only \$66,000 less than in July, while the gain in net earnings was \$144,000 less than in July.

Meanwhile the results on the leased New York, Pennsylvania & Ohio road in August since the lease have been:

	1883.	1884.	1885.	1886.
Gross earnings.	\$754,253	\$480,568	\$441,331	\$577,317
Expenses.	380,948	307,845	324,464	377,181
Net earnings.	\$373,305	\$172,73	\$116,867	\$200,136
Rental.	241,761	153,781	141,221	184,742
Profit.	\$131,544	\$18,942	\$15,394	...
Deficit.	\$24,354	...

The gross earnings this year were the largest since 1883, when an unusually large business was done over this line, and so were the net earnings, but the rental very nearly equalled the latter. Compared with last year the increases are:

	Gross earn.	Expenses.	Net earn.
Amount.	\$135,986	\$52,717	\$83,269
Per cent.	30.8	16.3	71.3

The rate of gain in gross earnings is twice as great as on the Erie proper, in expenses less, and in net earnings 12 times as great.

Adding the profit and subtracting the loss on this lease, we have net to the Erie from both roads:

	1883.	1884.	1885.	1886.
\$1,100,065	\$640,176	\$503,604	\$573,92	

which are to be compared with the net earnings of the Erie proper in previous years, leaving them less this year than in any other except last year and in 1878, but 14 per cent. more than last year.

For the 11 months of the company's fiscal year ending

with August, the earnings and expenses of the Erie proper have been:

	Gross earnings.	Expenses.	Net earn.
1877-78.	\$14,306,707	\$10,777,429	\$4,528,420
1878-79.	14,449,426	11,411,053	4,205,222
1879-80.	16,906,691	11,799,943	6,291,065
1880-81.	18,981,406	13,357,281	6,877,693
1881-82.	18,055,559	13,243,641	6,076,400
1882-83.	18,469,528	12,433,962	6,633,566
1883-84.	15,886,238	11,182,065	4,703,273
1884-85.	13,985,080	9,775,100	4,209,940
1885-86.			

Toledo together, and larger than any other market has received in any one week of this year, the nearest approach to it being 1,371,746 bushels received at St. Louis in the week to July 24. In the four weeks ending Sept. 18 this year, Duluth has received 4,397,787 bushels of wheat, which is more than its receipts for the whole year in any year previous to 1883, and about equal to the Chicago wheat receipts for the last six weeks, and to the Milwaukee receipts for the 25 weeks since March last. Milwaukee has often had larger wheat receipts than any other market, and it receives only spring wheat, unlike Chicago, which receives both winter and spring. Evidently Duluth has become the great spring wheat market, and apparently it is receiving from the country far south of it as well as from that directly west of it, which latter was formerly almost its sole source of supply. Wisconsin, Iowa and Nebraska produce more wheat than Minnesota and Dakota, but it has not appeared at Milwaukee and Chicago, formerly almost the sole markets for it, in quantities approaching those now going to Duluth. The largest receipts of the two together in any one week since harvest have been less than 750,000 bushels, and a good deal of this must have been winter wheat, from a territory further south.

The report of the earnings and expenses of the six railroads included in the "Atlantic system" of the Southern Pacific Company for the seven months ending with July, is interesting, because it gives data for a part of the country where few lines report monthly earnings, and still fewer net earnings, the lines being between New Orleans on the east, and El Paso on the west, in Louisiana and Texas.

In the aggregate these roads report:

	1886.	1885.	Inc. or Dec.	P. c.
Gross earnings.....	\$4,803,901	\$4,571,392	+ 232,509	5.1
Expenses.....	3,753,303	2,845,462	+ 907,841	31.9

Net earnings..... \$1,050,598 \$1,725,930 — 675,332 39.0

Only one of the roads shows a decrease in gross earnings for the seven months, but that is the Galveston, Harrisburg & San Antonio, which is the largest of them, and its decrease is 9 per cent., while the Morgan road gains 6½ per cent., the Louisiana & Western 8 and the Texas & New Orleans 3 per cent. Of the \$232,509 total gain in gross earnings \$105,000 was the earnings of two little roads not worked last year, whose expenses exceeded their earnings, and so reduced the net earnings, and the gain of the lines worked last year is but \$127,568, or 2.8 per cent., while their decrease in net earnings was \$658,615, or 38 per cent., owing to the very large increase of 28.6 per cent. in their working expenses. This was chiefly on the San Antonio road, whose earnings and expenses were:

	1886.	1885.	Inc. or Dec.	P. c.
Gross earnings.....	\$1,469,915	\$1,614,823	- \$144,908	9.0
Expenses.....	1,311,806	951,124	+ 360,682	37.9

Net earnings..... \$158,109 \$663,699 — \$550,590 83.1

The main line of this system carried the Pacific freight at extremely low rates most of this year, and carried most of what is shipped from the Atlantic coast. There was, however, another cause affecting the traffic of the San Antonio road, and one that would have been very serious in any agricultural country, namely—a drought for more than twelve months west of San Antonio—not one rain having fallen in that time. There is not much agriculture in that vast country, but the drought was so prolonged as to injure the grazing interests greatly, and these are great in that country. This, however, should have decreased the working expenses, which we see increased enormously, absorbing 89 per cent. of the earnings, against 59 per cent. last year. The larger through traffic probably increased expenses much more than earnings. The increase in the expenses of the Morgan Company, which includes the steamers, was also very large (\$392,545 = 21.3 per cent.), but it had an increase in gross earnings, and the Pacific freight doubtless yields but a small part of its earnings.

In *Frank Leslie's Illustrated Newspaper* of last week appeared two views of the Silver Creek catastrophe which differed materially in some of its details from those which we presented, and it will be almost needless to say that in those details they were incorrect, since our engravings were as accurate copies as the engraver could make of some excellent photographs which were taken very shortly after the accident by Mr. B. R. Gifford, of Dunkirk, N. Y., to whom we omitted to give due credit last week.

The net effect of *Frank Leslie's* views is to diminish materially the force of the moral to be drawn from the occurrence, by showing the engines as very much more smashed up than they were, and the telescoping as less complete. The tender is incorrectly shown as off its wheels and on the ground, likewise, and several minor details are unfaithful.

Among these details we do not include a row of men lying half in, half out of the windows, as if they had been hung over a clothes-line to dry. These were probably added by the artist with a commendable desire to relieve the horrors of the picture by an element of grotesque absurdity.

Record of New Railroad Construction.

Information of the laying of track on new railroad lines is given in the current and the last number of the *Railroad Gazette* as follows:

Buffalo Run, Bellefonte & Bald Eagle.—Track laid from Bellefonte, Pa., 17 miles.

Chicago, Burlington & Quincy.—The *Grand Island Branch* is extended from Broken Bow, Neb., west to Anselm, 19 miles.

Detroit, Bay City & Alpena.—Extended north to near Alpena, Mich., 3 miles.

Fremont, Elkhorn & Missouri Valley.—The *Lincoln Branch* is extended from Wahoo, Neb., south to Swedeburg,

6 miles. On the *Scribner Branch* track is laid from Scribner, Neb., west 18 miles.

Georgia, Midland & Gulf.—The first track is laid from Columbus, Ga., northward 6 miles.

Minnesota & Northwestern.—This company's *Dubuque & Northwestern* line is extended from Durango, Ia., northwest, 9 miles.

Missouri Pacific.—On the *Greenville-Dallas Branch* track is laid from Greenville, Tex., southwest 16 miles.

Ohio River.—Extended from Clifton, W. Va., northward 12 miles.

Pittsboro.—Extended west to a point three miles from Pittsboro, N. C., an extension of 5 miles.

Raleigh & Augusta Air Line.—Extended from Hamlet, N. C., southward 5 miles.

This is a total of 114 miles on 10 lines, making 3,788 miles reported so far this year. The new track reported to the corresponding date for 15 years has been:

	Miles	Miles	Miles
1886.....	3,788	1881.....	5,034
1885.....	1,743	1880.....	3,928
1884.....	2,665	1879.....	2,228
1883.....	4,281	1878.....	1,420
1882.....	7,589	1877.....	1,505

This statement covers *main track only*, second or other additional tracks and sidings not being counted.

NEW PUBLICATIONS.

The *Railway Service Gazette* is a new weekly paper intended to represent especially the interests of railroad employees and to circulate among them. It is published at Toledo, O., by Mr. Wm. R. Leflet, for some time past editor of the *Railroad*. Mr. Leflet's conduct of that journal is evidence that his new enterprise will be pushed with energy, and that every effort will be used to make it an excellent paper.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Chicago & Eastern Illinois, annual meeting, at the office in Chicago, Oct. 5, at noon.

Evansville & Terre Haute, annual meeting, at the office in Evansville, Ind., at 2 p. m., on Oct. 18.

Louisville & Nashville, annual meeting, at the office in Louisville, Ky., Oct. 6, at noon.

Ohio & Mississippi, annual meeting, at the office in Cincinnati, Oct. 14. Transfer books close Sept. 18.

Pullman's Palace Car Co., annual meeting, at the office in Chicago, at 3 p. m. on Oct. 14.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Chicago, Milwaukee & St. Paul, 3½ per cent., semi-annual, on the preferred stock, and 2½ per cent., semi-annual, on the common stock; both payable Oct. 18, to stockholders of record on Sept. 29.

Chicago, Rock Island & Pacific, 1¾ per cent., quarterly, payable Nov. 1, to stockholders of record on Sept. 29.

Delaware, Lackawanna & Western, 1¾ per cent., quarterly, payable Oct. 20, to stockholders of record on Sept. 30.

Mineral Range, 2½ per cent., quarterly, payable Oct. 5, to stockholders of record on Sept. 30.

New York & New England, 3½ per cent., semi-annual, on the preferred stock, payable Nov. 1, to stockholders of record on Oct. 16.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Roadmasters' Association of America* will hold its annual convention in St. Louis, on Tuesday, Oct. 12.

The *General Time Convention* will hold its fall meeting in New York, on Wednesday, Oct. 13.

The *Association of American Railroad Superintendents* will hold its next meeting at No. 46 Bond street, New York, on Thursday, Oct. 14.

The *Association of Railroad Trackmen of North America* will meet at Council Bluffs, Ia., on Thursday, Nov. 25.

The *Master Car-Builders' Club* holds its regular meetings at the rooms, No. 113 Liberty street, New York, on the third Thursday in each month.

The *New England Railroad Club* holds regular meetings at its rooms in the Boston & Albany passenger station in Boston, on the second Wednesday of each month.

The *Western Railway Club* holds its meetings at its rooms in Chicago on the third Wednesday in each month.

The *Western Society of Engineers* holds regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m. on the first Tuesday of each month.

Foreclosure Sales.

The *St. Louis, Salem & Little Rock* road was sold in St. Louis, Sept. 27, under a decree of the United States Circuit Court, and was bought for \$250,000 by Charles H. Taylor and Charles S. Freeborn as agents for the bondholders. The road, which was built to reach an iron-mining district, extends from Cuba, Mo., on the St. Louis & San Francisco road, to Salem, 41½ miles, with 30½ miles of branches. The funded debt consisted of \$1,000,000 first-mortgage bonds.

Association of American Railroad Superintendents.

The twelfth meeting of the Association will be held at 46 Bond street, New York city, on Thursday, Oct. 14 next.

Business to come before the meeting:

1. The election of members.

2. Report from committee appointed to consider letters of Roadmasters' Association relating to Coal Shutes, and Frogs and Switches; Messrs. Goodman, Blew and O'Rourke.

3. The report of Committee on Invitation to Central Association of Superintendents, and amendments to Constitution and By-Laws; Messrs. Metheny, Mulford, Blew, Wood and Royce.

4. The consideration of proposed change of name to Association of North American Railroad Superintendents.

5. The consideration of such other business as may be presented.

Superintendents intending to join the Association are cordially invited to attend this meeting.

Switchmen's Protective Fraternity.

The national conclave of the Switchmen's Protective Fraternity met in Kansas City, Sept. 21, with about 100 delegates

present. A public meeting was held at which speeches were made by several citizens of Kansas City and by members of the association.

After the public meeting the secret sessions of the conclave began. It is said that important changes in the organization will be made.

Western Railway Club.

The next meeting will be held at the rooms of the Club in Chicago on Wednesday, Oct. 20. The subjects for discussion are:

1. The first six rules for Interchange of Cars as adopted by the Master Car-Builders' Association at its last convention.

2. Sizes of Driving Wheel Centres and Section of Tires.

Baltimore & Ohio Employees' Relief Association.

The August sheet of this Association shows the payment of benefits to members during the month as follows: Main Stem, Transportation Department, 128; Machinery Department, 222; Road Department, 94; Baltimore & Philadelphia, 8; Trans-Ohio divisions, 158; Pittsburgh Division, 84; Physicians' bills, 115; total, 809.

Secretary S. R. Barr gives notice that at a meeting of the Committee of Management recently Mr. F. H. Britton was elected to represent the members in the committee, succeeding Mr. William Dunn, who had severed his connection with the service.

ELECTIONS AND APPOINTMENTS.

Atlantic, Greenville & Western.—Mr. W. A. McKelvy, of Greenville, S. C., has been chosen a director in place of Capt. Childs, resigned.

Canada Atlantic.—Mr. E. J. Chamberlain has been appointed General Manager of this road.

Chautauqua Lake.—The officers of this company, as consolidated, are: President, R. N. Marvin, Jamestown, N. Y.; Vice-President and General Manager, John C. Williams, Cleveland, O.; Secretary, Daniel H. Post, Jamestown, N. Y.; Treasurer, Eugene F. Fay, Boston.

Chicago, Burlington & Quincy.—The following order from General Manager H. B. Stone is dated Chicago, Sept. 24: "Mr. Paul Morton has been appointed General Passenger and Ticket Agent of this company, vice Mr. Perceval Lowell resigned. The appointment to take effect Oct. 1, 1886."

Mr. Chester M. Dawes has been appointed to succeed Mr. L. O. Goddard in the legal department as Assistant General Solicitor. Mr. Dawes is a son of United States Senator Dawes of Massachusetts, and was formerly assistant to Mr. Richard Tuthill when the latter held the position of United States District Attorney in Chicago.

Mr. Henry E. Heller has been appointed Traveling Passenger Agent in charge of the Pennsylvania District, with headquarters at Allentown, Pa., vice R. W. Gillespie, transferred.

Cumberland & Allegheny.—The incorporators are: A. A. Arthur, of Knoxville, Tenn.; E. H. Herrick, James S. Churchill and others.

East Tennessee, Virginia & Georgia.—General Manager C. H. Hudson has issued the following circular: "Mr. D. W. Lum is appointed Assistant Engineer with headquarters at Knoxville, Tenn. He will act under the direction of the General Manager in matters connected with maintenance of way, will have direction of construction and improvement work, and perform such other duties as may be assigned to him."

Evansville & Chicago.—The officers of this new company are: President, A. M. Owen; Vice-President, C. Lavel, Secretary, J. J. Morton; Treasurer, E. E. Jenkins; Chief Engineer, J. H. Pearson. Headquarters, Evansville, Indiana.

Evansville & Richmond.—This new company has its office in Evansville, Ind., and has the following incorporators: D. J. Mackey, Wm. Heilman, W. D. Ewing, G. J. Grammer, W. G. Lewis, E. B. Morgan and Edwin Taylor.

Fort Wayne, Peoria & Galesburg.—At the annual meeting in Fort Wayne, Ind., Sept. 20, directors were elected as follows: A. F. Edgerton, Edwin Evans, Henry M. Williams, Chas. McCulloch, A. C. Trentman, Chas. E. Bond, Fort Wayne, Ind.; E. H. Waldron, LaFayette, Indiana.

Georgia, Carolina & Northern.—The incorporators of this company are: R. F. Hoke, Raleigh, N. C.; L. W. Perrin, Abbeville, S. C.; Hoke Smith, Atlanta, Georgia.

Gulf, De Funik Springs & Northern.—The directors of this new company are: C. E. Dickerman, St. Paul, Minn.; Ransom Hubbard, South Bend, Ind.; Charles Everett, Bonifay, Fla.; C. C. Banfill, M. R. Dutton, De Funik Springs, Florida.

Kalamazoo, Hastings & Northern.—At a recent meeting in Kalamazoo, Mich., directors were elected as follows: Thomas S. Cobb, A. J. Bowne, Leroy Cahill, Frederick Bush, W. S. Dewing. The directors elected Thomas S. Cobb, President; George E. Dunbar, Secretary and Treasurer.

Lakeside & Marblehead.—The incorporators are: E. T. Blood, W. H. Brunner, Cleveland, O.; H. A. Kennedy, Canton, O.; C. H. Blood, H. A. Blood, Fitchburg, Mass. Office in Cleveland, Ohio.

Lake Shore & Michigan Southern.—Mr. C. B. Couch is appointed Assistant General Superintendent, a new office; he will have his office in Cleveland, O.

Mr. C. Miles succeeds Mr. Couch as Superintendent of the Eastern Division. Mr. Cyrus W. Burhans is appointed Chief Train Dispatcher of the Eastern Division, with office in Buffalo, N. Y., in place of Mr. Miles.

Louisville, New Albany & Chicago.—A Chicago dispatch reports that Mr. E. D. McCormick will be appointed General Passenger Agent in place of Mr. W. S. Baldwin, who is going to Pullman's Palace Car Company.

Middle and Western States Freight Association.—Mr. M. S. Chase, of the Lake Shore & Michigan Southern, has been made Chairman of the Rate Committee, in place of Mr. A. P. Bigelow, Baltimore & Ohio, resigned.

New Hampshire Railroad Commission.—Mr. H. M. Putney has been appointed a member of the Board for three years. He is a resident of Manchester and was until recently Collector of Internal Revenue.

New York, Lake Erie & Western.—Mr. George W. West is appointed Master Mechanic of the Mahoning Division of the New York, Pennsylvania & Ohio. He was recently Master Mechanic of the Buffalo Division of the West Shore road.

New Orleans & Gulf.—The officers of this new company are: John R. Elder, President; Lloyd R. Coleman, Vice-President; Mark R. Spelman, Secretary; Lucas E. Moore, Treasurer; Mark R. Spelman, General Superintendent. Office in New Orleans.

Poughkeepsie & Southern.—The directors of this new company have elected officers as follows: H. A. Nelson,

President; J. A. Perkins, Vice-President; Edward E. Perkins, Secretary; J. F. Sale, Treasurer.

Pullman's Palace Car Co.—A Chicago dispatch reports that Mr. W. S. Baldwin will be appointed General Agent of the Transportation Department. He is now General Passenger Agent of the Louisville, New Albany & Chicago, and formerly held the same office on the Buffalo, New York & Philadelphia.

Richmond & Danville.—Mr. James L. Taylor is appointed General Passenger Agent in place of Mr. Mercer Slaughter, resigned. Mr. Taylor has been for a long time General Passenger Agent of the Savannah, Florida & Western road.

South Chicago & Indiana.—The incorporators and first board of directors are: Oliver G. Fessenden, Hagen H. Butts, George H. Crawford, Adolph H. Zimmerman and Franklin Denison, all of Chicago.

Spokane & Idaho.—The officers of this new company are: President, D. C. Corbin; Vice-President, S. T. Hauser; Secretary and Treasurer, Harvey Barbour; Chief Engineer, A. Anderson. Office at Helena, Montana.

Union Pacific.—Mr. S. W. Eccles has been appointed General Agent of the Freight Department for California, with office in San Francisco. He was recently General Freight and Passenger Agent of the Denver & Rio Grande Western.

Wabash, St. Louis & Pacific.—Mr. C. S. Crane has been appointed Assistant General Passenger Agent, in place of J. L. Charlton, resigned.

Western Railway Club.—At the meeting in Chicago, last week, the following officers were chosen for the ensuing year: President, W. A. Scott, Chicago & Northwestern, Chicago; Vice-President, H. D. Cooper, Lake Erie & Western, Lima, O.; Secretary, Angus Sinclair, National Car & Locomotive Builder, Chicago; Treasurer, W. B. Snow, Illinois Central, Chicago.

West Shore.—Mr. James Macbeth is appointed Master Mechanic of the Buffalo Division in place of Mr. George W. West, who has gone to the New York, Pennsylvania & Ohio road.

West Virginia & Ohio.—The incorporators are: Joseph J. Doran, W. C. Bullitt, W. M. George, Jr., W. A. Dick and Richard C. Dale, of Philadelphia.

Wisconsin Central.—A Chicago dispatch reports that Mr. F. N. Finney, for a long time past General Manager, has been chosen Vice-President of this company. Mr. Finney's successor as General Manager will be Mr. W. S. Mellen, now Assistant General Superintendent of the Chicago & Northwestern road.

PERSONAL.

—Mr. Robert Law has resigned his position as Superintendent of the Chicago, Burlington & Kansas City and the St. Louis, Keokuk & Northwestern roads.

—A dispatch from Texarkana, Tex., reports that F. J. Lowe, a prominent railroad contractor of that place, has made an assignment, his liabilities being about \$150,000. Mr. Lowe has had a large contract on the St. Louis, Arkansas & Texas road.

—Mr. M. A. Slaven, late Manager of the American Contracting & Dredging Co., died last week, of fever contracted in the Panama Isthmus. Mr. Slaven was a man of exceeding energy, and was the active agent and executive officer of the company which has been doing good work on the Panama Canal.

—Mr. George W. West having resigned his office as Master Mechanic of the Buffalo Division of the West Shore road to accept a position on the New York, Pennsylvania & Ohio, his associates on the West Shore have presented him with a valuable gold watch and chain. Mrs. West received at the same time a handsome silver tea-set.

—Mr. Emmons Raymond, who recently retired from the presidency of the Connecticut & Passumpsic Rivers Railroad Co., is now 80 years of age, and was probably in years the oldest railroad president in the United States. Mr. Raymond has been a director of the company from its first organization 36 years ago, and has been President for 16 years.

—It is reported that Mr. W. S. Baldwin, General Passenger Agent of the Louisville, New Albany & Chicago, will retire from that office Nov. 1, to accept an important position with Pullman's Palace Car Co. Mr. Baldwin is known as a very active and energetic officer. He has held his present office about a year, having been previously on the Buffalo, New York & Philadelphia.

—Gen. James Bowen died at his residence at Hastings, N. Y., Sept. 29, aged 78 years. He was for many years a prominent citizen of New York, having a considerable fortune and being active in politics. He served in Congress and acted as Police Commissioner of the city, Commissioner of Immigration and Commissioner of Charities and Correction. During the war he was Brigadier General and served as Provost Marshal at New Orleans. Some 45 years ago Gen. Bowen was a director of the Erie Railroad, and was chosen President of the company in 1843, serving for three years.

—Mr. W. S. Mellen, Assistant General Superintendent of the Chicago & Northwestern, resigns Oct. 1, to go to the Wisconsin Central. Mr. Mellen became Assistant General Freight Agent of the Northwestern in 1875, and held the office until 1881, when he resigned to accept the position of Assistant General Superintendent of the Atchison, Topeka & Santa Fe. He gave up this position Nov. 1, 1882, to go back with the Northwestern as General Freight Agent. About two years ago he was promoted to the position of Assistant General Superintendent of the Northwestern, which he has held until the present time.

—George M. Bartholomew, the Hartford defaulter, was chiefly known as President of the Charter Oak Life Insurance Co., but had also considerable railroad experience. He was one of the trustees who managed the Hartford, Providence & Fishkill road for nearly 20 years. He was for three years President of the old Boston & Hartford & Erie Co., and was afterward one of the assignees in bankruptcy of that company. He was at one time largely interested in the Chicago & Northwestern, and was a director of that company from 1858 to 1867. He was also one of the first directors of the Richmond & Allegheny Co. His only railroad interest lately was in the Jacksonville, Tampa & Key West road in Florida. He was President of that company and also of the construction company which built the road, and it was chiefly through his influence that the money to build it was raised. The securities are largely owned in Connecticut, and the officers of road are nearly all Connecticut men. The only loss reported in this connection is the disappearance of \$40,000 Jacksonville, Tampa & Key West bonds which were in his possession as President.

—Mr. Frederick N. Finney, who has just been made Vice-President of the Wisconsin Central, was born in Boston in

1832, and entered active service as a civil engineer when 22 years old. After serving as assistant on several roads he was appointed Resident Engineer on the Chicago & Northwestern. In 1854 he served for a time as Engineer on the Mountain Division of the Union Pacific, but left that road the same year to take charge of the construction of the Jamestown & Franklin, now leased to the Lake Shore. He served on this road as Engineer and as Assistant Superintendent for three years, when he was appointed Chief Engineer and afterward General Superintendent of the Erie & Pittsburgh. In 1870 he went to the Canada Southern as Chief Engineer and Superintendent, and in 1873 left that road to accept a similar position on the Toledo, Peoria & Warsaw. Five years later, in 1878, he was made General Manager of the Wisconsin Central and has held that office ever since.

—Mr. John Dickson Taylor, Treasurer, of the Pennsylvania Railroad Co., died at his residence in Philadelphia, Sept. 25, in the 61st year of his age. The Philadelphia *Ledger* says: "Confinement to the duties of his office had broken a constitution naturally vigorous, the first symptom becoming visible in a slight stroke of paralysis at Cape May, in August 1885. The spring of this year found him much prostrated, and he was granted a six months' leave of absence from May 1. The immediate cause of death was angina pectoris."

—Mr. Taylor, the son of Levi Taylor, a well-known merchant, was born in this city in October, 1825. At the early age of 15 years he embarked in the wholesale grocery business, occupying the stand at the corner of Chestnut and Water streets. In the year 1843 he entered the wholesale grocery firm of Ezra Wheeler & Co., New York, returning three years later, on the death of his father, and entering the wholesale grocery firm of Taylor, Gillespie & Co., 11 and 13 South Water street. In 1859 the firm entered upon the business of sugar refining on St. John street, above Vine, which it continued until 1872. In 1873 he was appointed Treasurer of the Rockhill Iron & Coal Co. He was elected Assistant Treasurer of the Pennsylvania Railroad Co. July 22, 1874, and Treasurer, April 10, 1878. He was a director in the Philadelphia Trust Co., also of the Delaware Mutual Safety Insurance Co. For many years he was a vestryman of St. Andrew's Episcopal Church, assuming the same position in the Church of the Saviour after his removal to West Philadelphia, besides being a member of the Standing Committee of the diocese of the Episcopal Church in this state. The deceased leaves a widow, two sons and three daughters."

TRAFFIC AND EARNINGS.

Central Traffic Association.

The Committee on Revision of Contract has recommended the following changes which were to be considered at the meeting in Chicago this week:

"First—More adequate provision for including short-haul traffic now exempted, but which directly or indirectly affects longer hauls, larger traffic and greater revenues. The present system leaves uncontracted and uncontrolled a large number of interior common points having an aggregate traffic of important magnitude. The exemptions stimulate evasions by short billing; the billing from fictitious origin points; the formation of new routes; the abnormal increase of business via new junctions; the building of short connections in order to establish such exempted junctions and routes; a preference by railroads which are in more than one pool for the one in which they get the largest percentage; the establishment of an increasing number of intermediate markets on the various routes of property eastward; the inability to deny equal privilege at an increasing number of such points if the old ones continue much longer unregulated; and the depletion of tonnages at contract points by lines possessing these dual facilities as against roads having no corresponding double or exempted outlets. Owing to these reasons some companies now pay over balances for excesses of tonnage carried only because the total traffic is depleted by secondary and unreported routes, whereas if the whole traffic known to be destined to the trunk lines were returned for division, the tonnages and balances would be changed. On the other hand, companies which thus deplete the main centres by the use of their alternate and unreported routes do not pay anything for equal or larger excesses of the same traffics going to the same ultimate destinations, simply because that excess is destined to short-billed points or sent via evasive routes. The committee, therefore, proposes that this short traffic shall be included in the main contracts or in subsidiary agreements, and have enlarged the number of points which should be contracted."

"Second—The principle of permanent arbitration. It provides a more speedy and uniform judgment from at least one mind charged with the duty of keeping currently familiar with all the important affairs of the Association, and looking at all its localities and interests impartially.

"Third—the incentive to the constant reopening of percentages and the control of traffic for that purpose is sought to be modified by standard periods in which redivisions may be charged.

"Fourth—The Committee has included westward as well as eastward traffic in the agreement.

"Fifth—it has enlarged and defined the scope and methods of arbitration.

"Sixth—it has provided that intermediate traffics between competing points shall not be carried at less rates per mile than through traffics.

"Seventh—it has made the division of rates a subject of arbitration."

Arbitrator E. P. Wilson has decided that no change should be made in the differential passenger rates from Cincinnati to New York, but that immediate steps should be taken to determine respective proportions for each line in interest, after which the method of securing to each line its proportion will become a practical question.

A Chicago dispatch of Sept. 29 says: "The passenger department of the Central Traffic Association, in the course of a meeting here to-day, took up the question of pooling the traffic between Chicago and New York. The proposition was made to form sub pools from Chicago and other Western pool-points to New York. To this the Chicago & Grand Trunk strenuously objected. It would not consent to the formation of such sub-pools, as it would not secure the proportion of traffic it was entitled to in a pool between Chicago and New York only. It insisted that a gross pool of all east-bound business beyond the Western termini of the trunk lines should be made. After a long and animated discussion the Chicago & Grand Trunk carried its point, it being decided to form one gross pool of all east-bound business.

The Grand Trunk's Chicago-Boston Differential. Mr. E. P. Wilson, as Arbitrator for the Central Traffic Association, has decided against allowing on tickets from points west of Chicago the differential of \$3 on the fare from Chicago to Boston by way of the Chicago & Grand Trunk and the Grand Trunk which is allowed on tickets from Chicago. Rates to interior New England points are not to be affected by the differential from Chicago, except that rates to points on the route to Boston may be as low as the rate to Boston. The Arbitrator says that the information furnished is not sufficient to make it possible to say what fares are required to enable the Grand Trunk line to carry a fair share

of the travel, but he makes the decision until further experience may indicate better what should be done. As to printing differentials in rate sheets and their use by convictions as basing rates, he asks for further evidence and argument, pending which he decides that they be not so published nor used.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Ala., Ga. South...	\$725,294	\$667,054	L. \$58,240	8.7
Balt. & Potomac...	850,566	862,198	D. 5,632	0.6
Net earnings...	332,486	329,610	L. 2,876	0.8
Buff., N. Y. & P. P. ...	1,704,079	1,521,608	L. 182,471	12.0
Net earnings...	334,869	339,417	D. 4,548	1.3
Camden & Atl. ...	440,959	412,835	L. 28,124	6.8
Net earnings...	116,880	121,948	D. 5,068	4.2
Cin., N. O. & T. P. ...	1,782,961	1,668,773	L. 114,188	6.8
Cleve. & Canton...	228,640	199,305	L. 38,335	20.2
Den. & R. G. W. ...	642,631	616,451	L. 26,180	4.2
E. Ten., Va. & G. ...	2,559,124	2,519,545	L. 39,579	1.5
N. Or. & N. E. ...	376,225	415,632	D. 39,407	9.5
N. Y., L. E. & W. ...	11,779,085	9,839,681	L. 1,939,404	19.7
Net earnings...	3,931,616	2,844,066	L. 1,087,550	38.2
N. Y., P. & Ohio ...	3,972,666	3,114,184	L. 858,472	21.2
Net earnings...	1,328,417	796,081	L. 531,736	66.5
N. Y., Sus. & W. ...	696,475	698,163	D. 1,690	0.3
Net earnings...	290,616	317,388	D. 26,772	8.5
Norfolk & West. ...	1,993,074	1,697,701	L. 295,373	17.0
Net earnings...	782,128	621,175	L. 160,953	26.0
Northern Cen. ...	3,553,889	3,460,865	L. 73,024	2.1
Net earnings...	1,219,699	1,334,723	D. 114,854	8.6
Phila. & Reading ...	18,992,252	18,297,802	L. 690,450	3.8
Net earnings...	7,598,413	7,271,217	L. 327,194	4.5
Vicks., Shre. & T. ...	307,056	262,345	L. 44,711	17.1
Vick., S. & P. ...	267,585	219,163	L. 48,482	22.1
West Jersey....	943,414	892,937	L. 50,477	5.6
Net earnings...	362,497	355,878	L. 6,619	1.8

	July 31:	1886.	1885.	Inc. or Dec.	P. c.
Lou., N. O. & T. ...	\$142,141	\$601,601	L. \$240,540	39.7	
Net earnings...	156,048	47,116	L. 108,932	23.0.5	
Maine Central ...	1,638,480	1,552,045	L. 86,435	5.6	
Net earnings...	603,255	555,829	L. 47,426	8.5	
Peoria, Dec. & E. ...	410,710	382,288	L. 28,424	7.4	
Net earnings...	181,951	150,908	L. 24,983	15.9	

	August:	1886.	1885.	Inc. or Dec.	P. c.
Ala., Ga. South...	\$97,756	\$77,352	L. \$20,404	26.5	
Balt. & Potomac...	113,930	102,851	L. 11,079	10.7	
Net earnings...	48,977	40,040	L. 8,937	22.3	
Buff., N. Y. & P. ...	257,734	228,849	L. 28,885	12.4	
Net earnings...	74,710	62,774	L. 11,936	19.0	
Camden & Atl. ...	128,700	120,559	L. 8,141	6.8	
Net earnings...	75,390	70,661	D. 3,274	4.1	
Cin., N. O. & T. P. ...	245,739	238,185	L. 7,554	3.2	
Cleve. & Canton...	35,229	23,434	L. 11,795	51.0	
Den. & R. G. W. ...	89,350	91,313	D. 1,963	2.2	
N. Or. & N. E. ...	39,316	36,710	L. 2,606	7.0	
N. Y., L. E. & W. ...	1,059,119	1,437,348	L. 221,771	15.4	
Net earnings...	557,698	527,958	L. 29,740	5.6	
N. Y., P. & Ohio ...	557,317	441,338	L. 115,979	26.3	
Net earnings...	200,135	216,874	D. 16,739	7.7	
N. Y., Sus. & W. ...	94,846	101,353	D. 6,507	6.4	
Net earnings...	39,040	47,964	D. 8,924	18.8	
Norfolk & West. ...	287,407	250,196	L. 37,211	15.0	
Net earnings...	122,919	104,813	L. 18,006	17.0	
Northern Central ...	502,027	451,370	L. 50,657	11.2	
Net earnings...	198,731	180,484	L. 18,247	10.1	
Phila. & Reading ...	2,808,268	2,940,749	D. 132,481	4.5	
Net earnings...	1,248,562	1,413,963	D. 105,431	11.7	
Vicks., Shre. & T. ...	37,714	34,650	L. 3,064	8.8	
Vick., S. & P. ...	37,883	32,297	L. 5,586	17.4	
West Jersey....	217,918	212,639	L. 5,279	2.5	
Net earnings...	113,327	119,026	D. 6,299	5.2	

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Cotton.

Cotton movement for the week ending Sept. 24 is reported as follows, in bales:

Interior markets:	1886.	1885.	Inc. or Dec.	P.c.
Receipts	65,575	73,287	D. 7,712	10.5
Shipments	57,703	55,809	I. 1,894	3.4
Stock, Sept. 24	58,734	52,452	I. 6,382	12.2

Seaports:	1886.	1885.	Inc. or Dec.	P.c.
Receipts	106,601	114,873	D. 8,272	7.2
Exports	44,373	40,826	I. 3,547	8.7
Stock	262,728	241,740	I. 20,988	8.7

The total shipments from the plantations for the crop year (from Sept. 1) to Sept. 24 are estimated at 243,534 bales, against 312,067 bales last year and 275,866 bales in 1884.

The *Commercial and Financial Chronicle* gives the following statement of the total crop for the year ending Aug. 31, in bales:

	1885-86.	1884-85.	1883-84.
Receipts at the shipping ports, bales	5,306,686	4,776,190	4,850,575
Add shipments from Tennessee, etc., direct to manufacturers	813,529	626,822	529,477
Total	6,210,215	5,403,021	5,380,052
Manufactured South, not included above	340,000	266,000	334,000

Total cotton crop for the year, 6,550,215 5,669,021 5,714,052

The increase last year over 1884-85 was thus 881,194 bales, or 15.5 per cent.; over 1883-84 it was 836,163 bales, or 14.6 per cent.

Southwestern Passenger Meeting.

A Chicago dispatch of Sept. 29 says: "The General Managers of the various roads between Chicago, St. Louis and Southwestern Missouri River points met here to-day to make a final effort to bring about the formation of a pool on Southwestern passenger traffic. The result of the meeting augurs badly for the success of the new scheme. Not only was no progress made, but the situation is rather worse than it was at the conclusion of the meeting held two weeks ago. At that time the principal issue was in regard to the statistics upon which to base percentages. This question was not reached at all to-day. The managers did not even get through with the consideration of the first section of the agreement, which had already been adopted at the previous meeting, but was reconsidered to-day. This section provides for the territory to be included in the new pool. The Missouri Pacific and other roads having lines west of the Missouri were not satisfied with the proposed boundaries west of the river, and after a discussion the meeting adjourned until to-morrow."

Indianapolis Car Movement.

The number of cars received and forwarded at Indianapolis has been:

	Week ending—	Aug. 28.	Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.
1886—Total.		20,521	21,103	21,113	21,198	22,391
Loaded		16,057	16,390	17,123	18,546	18,648

	1885—Total.	Aug. 25.	Sept. 1.	Sept. 8.	Sept. 15.	Sept. 22.
Loaded		19,730	20,462	20,462	21,240	21,240
Loaded		14,613	15,966	15,567	18,602	18,602

The local business continues large, and coal shipments are unusually heavy. The through east-bound movement keeps up well.

Coal.

Coal tonnages for the week ending Sept. 18 are reported as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Anthracite	714,745	773,943	D. 58,198	7.6
Eastern bituminous	292,018	232,151	I. 30,767	13.2
Coke	75,004	47,338	I. 27,726	58.5

Coal shipments from the mines below Kanawha Falls on the Great Kanawha River in West Virginia for the year ending June 30 were, in bushels:

	1885-86.	1884-85.	Decrease.	P. c.
By railroad	13,953,745	12,972,217	981,528	7.6
By river	17,861,613	17,812,323	49,290	0.3

Total 31,815,358 | 30,784,549 | 1,030,818 | 3.3 |

The production last year would have shown a greater increase but for interruption caused by strikes.

Cumberland coal shipments for the week ending Sept. 25 were 70,361 tons. Total to Sept. 25 this year, 1,679,465; last year, 2,019,852; decrease, 340,387 tons, or 16.9 per cent.

Pennsylvania Railroad coal tonnage for the week ending Sept. 25 was:

	Coal.	Coke.	Total.	1885.
Line of road	158,493	63,095	229,188	185,942
From other lines	90,098	1,024	91,122	92,994

Total 248,591 | 64,719 | 313,310 | 278,936 |

Year to Sept. 25 8,398,400 | 2,486,973 | 10,880,373 | 9,938,938 |

Increase for the week, 34,374 tons, or 12.3 per cent.; increase for the year, 947,435 tons, or 9.5 per cent.

Traffic Notes.

The provision rate war from Northern packing towns to Memphis, ascribed to the competition of the Kansas City, Springfield & Memphis road, which carries from Kansas City to Memphis, has come to an end, the rates being restored to the basis of 21 cents from Chicago. They had been as low as 7½ cents.

The Union Stock Yards Co. of Chicago has agreed to weigh all shipments to interior points in the East for 25 cents per car.

Commissioners George R. Blanchard and L. D. Richardson, arbitrators for the Peoria Committee of the Central Traffic Association, have sent out their award of percentages in the through pool of the lines running east from Peoria. The new award is as follows: Peoria, Decatur & Evansville, 20%; Chicago, Rock Island & Pacific, 20%; Indiana, Bloomington & Western, 18½; Illinois Midland, 5; Wabash, 15½; Toledo, Peoria & Western, 20% per cent.

Arrangements have been completed for weighing all incoming west-bound live stock at Chicago, Indianapolis, Detroit and Cincinnati, commencing with Sept. 27. Advice have been received from the cities mentioned that such weights would hereafter be secured. Mr. H. B. Goodwin has temporarily been appointed Live Stock Agent at Detroit, to superintend the work of weighing at that point. In view of this announcement, the shippers at Buffalo have declared their willingness to weigh live stock there, beginning on the same date.

Southern Passenger Association.

The Southern Passenger Association will come into existence on Oct. 1. Of the Articles of Agreement article 1 reads as follows:

"The transportation companies, parties hereto, owning and operating lines south of the Ohio and Potomac rivers, hereby constitute and create the Southern Passenger Association, forming an alliance between and among themselves for mutual protection. The objects of the Association are: To make, publish and maintain joint tariffs of passenger rates which shall be agreed upon by the Rate Committee and approved by the Commissioner, to define the various classes of passenger business and to make rules for the conduct thereof. No party shall take separate action in any matter affecting the interest of one or more of the other parties contrary to the spirit and intent of this agreement.

"Any company may withdraw from this Association upon written notice to the Commissioner, after 30 days' notice. Expulsions can be made by a two-thirds vote. Officers of the Association shall be a Commissioner, who shall act as Chairman, and an Auditing Committee of three, to serve one year. An admission fee of \$100 is required. Penalty for rate-cutting is fixed at \$50 fine for the first and second offenses, and dismissal for the third offense. Checking more than 150 pounds of baggage on a whole, or 75 pounds on a half ticket, is punishable in the same way, and in the sale by a ticket broker of a ticket for less than the regular rate, the company whose ticket has been sold shall be liable to fine. Exchange of tickets is forbidden, and passes must not be given to influence business."

Other articles provide for the granting of special rates, theatrical rates, etc. One article provides for the abolition of commissions on sales of tickets by a person not a regularly appointed agent of a railroad company.

Through and Local Rates in Georgia.

The Georgia Railroad Commission on Sept. 22 issued the following notice to the railroad companies of the state:

"The Commissioners desire to call your attention to the following table, showing the approximate proportions received by railroad companies for 200 miles on through shipments between, say, Cincinnati and Macon, and the local rates allowed by the Commissioners for the same distance:

Class.	Proportion on through shipment	Local rate for 200 miles.
1	36	70
1½	54	1.05
D 1	72	1.40
3 1	1.08	2.10
2	31	60
3	27	50
4	23	40
5	19	32
6	16	27

"The above table of local rates is based upon the Commissioners' standard tariff. Some companies are allowed from 20 to 50 per cent. upon the standard tariff. In such cases, the differences would be still greater than those given.

"The classification of articles adopted by the Southern Railway & Steamship Association and the classification adopted by the Commissioners appear to be about the same; but an application of the same classification to a through shipment and a local shipment, for any given distance, will clearly show that the proportion received by any road in Georgia on the through shipment is unreasonably below the amount received by the same company on a local shipment for the same distance. This discriminates unjustly against all local industries.

"A part of the Fifth Section of the Act establishing the Railroad Commission of Georgia reads as follows: 'The Commissioners appointed * * * shall make such just and reasonable rules and regulations as may be necessary for preventing unjust discriminations in the transportation of freight and passengers on the railroads of this state.'

"In accordance with the requirements of this law, it becomes the duty of the Commissioners to call your attention to this inequality of rates, and to give notice that, in the opinion of the Commissioners, some action should be taken to remedy the same.

"Either the rates on through business should be raised or the Commissioners' classification, so far as articles manufactured within the state of Georgia are concerned, should be so reduced as to place the local rates within a nearer approach to the proportions received by the railroad companies doing business within this state, on shipments coming from points without the state of Georgia.

"A study of the two classifications, above referred to, will show that nearly all articles manufactured within this state are embraced in the classes already quoted.

"With the object above mentioned in view, the Commissioners hereby request all railroad companies doing business within the state of Georgia, to formulate a table of classification and rates, embracing only articles manufactured within this state, and to file the same in the office of the Commission on or before Oct. 26, 1886, together with such personal or written explanations as they may desire to present to the Commission, all of which shall have the earnest consideration of the Commissioners in their effort to arrive at such action as they deem just and reasonable."

RAILROAD LAW.**Land Damage Claims—Receivership.**

In the case of Van Slyke against the Bloomfield Railroad Co., the Indiana Supreme Court holds as follows:

1. A Receiver of a corporation is not its grantor, so that the company would not be liable for his acts as an independent contractor.

2. When land of a citizen is wrongfully appropriated by a railroad corporation he does not lose his rights by a failure to make a claim to the Receiver for compensation. If his property is wrongfully seized he may recover for the injuries sustained, when the Receiver has been discharged and the corporate affairs turned back into the hands of the company.

Liability of Sleeping Car Companies.
A dispatch from Taunton, Mass., Sept. 21, says: "A case involving the important question of the liability of sleeping car companies for losses sustained by their patrons while in transit was tried in the Superior Court here to-day. In October, 1884, William Lewis and William R. Wing, two prominent business men of New Bedford, started for San Francisco from the Albany station in Boston on the sleeper 'Pontiac,' owned and run by the New York Central Sleeping Car Co. Lewis had bills to the amount of \$200 in the inside pocket of his vest, and before leaving home had his wife sew up the mouth of the pocket. Wing had in one of the pockets of his vest a small leather pocketbook, in one compartment of which was \$150 and in another bills to a considerable amount. On retiring each placed his vest under the pillow of his birth. At about 6 o'clock in the morning Lewis discovered that the bottom of his vest had been cut open and the money sewed in his pocket taken. He notified the porter of the robbery. Wing, on examining his pocket, discovered that his pocketbook had been abstracted during the night and replaced. Before replacing it the thief had taken the money from the fold containing the \$150 and had left that which was in the other compartment.

"The defendant, while not admitting that the complainants had sustained the loss while in the car, rested their claim for immunity principally on the ground that in law it was not liable, even though the thefts had been committed during the night in question. The counsel of the sleeping car company asked the Court to rule that the fact that the porter was not exercising due diligence in watching over the car in the morning after the robbery had taken place was not competent evidence that they had not exercised due care at the time of its actual occurrence, and that furthermore, owing to the peculiar nature of its business, the corporation could not be placed upon the same footing as a railroad company in its capacity of a common carrier, or as an innkeeper as to his

responsibility for the property of his guests intrusted to his charge. In both instances the Court refused to grant the prayer of counsel and exceptions were filed after the jury had returned a verdict for the complainants for the sums lost, with interest."

OLD AND NEW ROADS.

Americus, Preston & Lumpkin.—Work is progressing steadily on the extension from Lumpkin, Ga., west to the Chattahoochee River. The contract for grading the extension from Americus eastward to the Ocmulgee River has been let to Perkins Brothers, of Birmingham, Ala., who begin work at the rate of \$10,000 per mile on the projected line.

Archison, Topeka & Santa Fe.—C. H. Venner, a stockholder, who was recently defeated in the Kansas courts in an effort to enjoin the company from buying the Gulf, Colorado & Santa Fe, has given notice that he will take legal measures to enjoin the company from giving any guarantee on Atlantic & Pacific bonds, either alone or in connection with the St. Louis & San Francisco.

Reports are again current that the company will extend its line from Kansas City to Chicago, and its engineers are said to have determined on a very good and direct line.

Atlantic, Greenville & Western.—At a meeting held in Ninety-six, S. C., Sept. 18, the stockholders voted to make the road of standard instead of 3 ft. gauge, and to authorize the execution of mortgage to secure an issue of bonds at the rate of \$9,000 per mile on the projected line.

The directors met subsequently and received a proposition from Susong & Co., a firm of railroad contractors, who offer to take the work already done, right of way, etc., with all subscriptions to the stock and the whole issue of bonds, and agree to complete the road from Ninety-six to Augusta, Ga., in three months, and from Ninety-six to Knoxville, Tenn., in two years.

Atlantic, Tennessee & Ohio.—The Richmond & Danville Co., which leases this road, some time ago offered to buy the stock, provided all of it could be turned over. The proposition was accepted by all except five or six persons holding about 60 shares. They have refused to come in, and the proposition has been withdrawn.

Baltimore & Ohio.—A special meeting of the board was held in Baltimore, Sept. 25, "to consider the settlement made with the Central Ohio Railroad Co., as reorganized, for its permanent improvements, and for the consideration of the contracts between the Philadelphia & Reading Railroad Co., the Baltimore & Ohio Railroad Co., the Baltimore & Philadelphia Railroad Co., the Schuylkill River East Side Railroad Co., and the Central Railroad of New Jersey."

The agreements in question, which had previously received the signatures of the officers of the company, were ratified by the board. The traffic contracts between the Baltimore & Ohio and the Reading and Jersey Central had previously been ratified by the two last mentioned companies, and the ratification by the Baltimore & Ohio board was the final step that makes them binding. The contracts, which have heretofore been outlined, provided for an interchange of business, two years for freight and six years for passengers. The settlement with the Central Ohio Co. provides for the issue of \$2,850,000 general mortgage 4½ per cent. bonds, \$1,000,000 of

Lake with an extension to Falconer, N. Y., on the Dunkirk, Allegheny Valley & Pittsburgh road.

Chicago, Burlington & Northern.—This company's shops at La Crosse, Wis., will be as follows: A planing mill, 60 by 200 ft.; a paint shop and two car shops, each 90 by 290; a blacksmith car depot, 60 by 100; another car depot, 60 by 100; copper shop and brass foundry, 30 by 60; boiler shop, 75 by 90; blacksmith shop, 75 by 200; machine shop, 110 by 290; boiler and engine rooms, 40 by 50; coal chutes, with 84 bins, and woodsheds and transfer tables connecting.

Chicago, Burlington & Quincy.—On the Grand Island Extension of this company's Burlington & Missouri River line track is now laid to Anselm, Neb., 19 miles beyond the late terminus at Broken Bow and 99 miles westward from Grand Island.

Chicago & Eastern Illinois.—The statement for July, the first month of the fiscal year, is as follows:

	1886	1885	Increase, P. c.
Earnings.....	\$141,250	\$114,055	23.8
Expenses.....	84,529	70,705	13.824

Net earnings..... \$56,721 \$43,350 \$13,371 30.9

It is said that August will make an equally good showing. In September there has been some falling off, owing to bad weather.

Chicago, Milwaukee & St. Paul.—This company will reduce passenger fares on all its lines in Wisconsin and Minnesota to 3 cents per mile. The reduction will take effect Oct. 15.

A Milwaukee dispatch says that the contract for the bridge over the Missouri River near Kansas City have been let. The contract price is \$600,000 for the whole work. The bridge will be 1,600 ft. long and 80 ft. above low water. Work will be begun as soon as the plans are approved by the Secretary of War.

This company is building this year about 620 miles of new road. This amount is divided up as follows: Kansas City line, 205 miles; Sioux City line to Astor, 90 miles; Scotland Extension, 70 miles; Ipswich Extension, 32 miles; Roscoe line, north and south, 60 miles; Ellendale Extension, 60 miles; Bristol Extension, south, and Madison Extension, north, 70 miles. The Dakota extensions mentioned are made for the purpose of developing new sections, but they go into regions already so well populated as to require railroads.

Chicago & Northwestern.—This company gives notice that the Winona & St. Peter first-mortgage 7s, which will mature Jan. 1 next, will be redeemed at any time on presentation at the company's office in New York at par and accrued interest to the date of presentation. There are \$2,089,000 of these bonds outstanding.

Cincinnati, Indianapolis, St. Louis & Chicago.—The statement for July, the first month of the fiscal year, is as follows:

	1886	1885	Increase, P. c.
Earnings.....	\$213,630	\$177,087	20.6
Expenses.....	128,146	110,414	17.732
Net earnings.....	\$85,484	\$66,673	28.2
Fixed charges.....	50,000	50,000	...
Surplus.....	\$35,484	\$16,673	\$18,811 112.6

It is reported that the board has under consideration the question of building a second track from Cincinnati to Indianapolis.

Cincinnati, Sandusky & Cleveland.—As noted elsewhere, the United States Circuit Court has directed the Receiver of the Indiana, Bloomington & Western Co. to pay this company the rental due under the lease.

Stockholders are asked to give their proxies for the approaching annual meeting to parties representing the Indiana, Bloomington & Western Co., the reason advanced being that a board of directors chosen by such votes can harmonize the relations between the company and the lessee. This is opposed by several of the Boston stockholders, who claim that it is necessary to retain an independent board in order to protect the interests of the lessor and maintain the present lease.

Cincinnati, Washington & Baltimore.—It is stated that during his recent visit to England, Mr. Robert Garrett, President of the Baltimore & Ohio Co., agreed to sell English holders in this company the \$4,000,000 second income bonds now owned by the Baltimore & Ohio. These bonds have voting powers, and the sale will transfer the control of the company to the English holders.

Cleveland & Marietta.—It is stated that negotiations are in progress for the consolidation of this company with the Valley Railroad Co. of Ohio, making a line from Cleveland, O., to Marietta.

Covington & Macon.—The Atlanta, Ga., *Constitution* says: "Mr. John H. Inman, who has been identified with the construction of the Macon & Covington Railroad, announces that he has severed all connection with this enterprise, and that the Richmond & Danville Co. has no interest whatever in this road."

Cumberland & Allegheny.—This company has been incorporated to build a railroad from Morristown, Tenn., on the East Tennessee, Virginia & Georgia road, to Tazewell.

Detroit, Bay City & Alpena.—Track on this road is now laid to a point 19 miles northward from the late terminus at Black River, Mich., and 102 miles from the junction with the Michigan Central at Alger. About two miles remain to be completed to carry the road to the business section of Alpena.

Evansville & Chicago.—Surveys are in progress for this projected line, which is to run from Evansville, Ind., northwest to St. Francisville, Ill., where it will connect with the Cairo, Vincennes & Chicago road. The distance is about 43 miles.

Evansville & Richmond.—This company has filed articles of incorporation in Indiana to build a railroad from Elkhorn, Daviess County, through Martin, Bartholomew, Decatur, Rush, Fayette and Wayne counties to Richmond, a distance of 120 miles.

Florida Railway & Navigation Co.—Mr. P. Kelley, of Fernandina, Fla., has the contract for the extension of this company's Southern Division to Plant City, Fla., to connect with the South Florida road. Work is to be begun at once.

Fremont, Elkhorn & Missouri Valley.—On the Lincoln Branch track is now laid to Swedesburg, Neb., 6 miles beyond the late terminus at Wahoo and 29 miles southward from the main line at Fremont.

On the Scribner Branch work is progressing rapidly and track has been laid for 16 miles. This branch leaves the main line at Scribner, Neb., 23 miles west of Fremont, and is to run west to Shell Creek, 63 miles.

Georgia, Carolina & Northern.—Notice is given of an application to incorporate this company to build a railroad from Atlanta through Athens, Ga., and Abbeville,

S. C., to Monroe, N. C. The applicants promise to begin work as soon as the company is organized.

Georgia Midland & Gulf.—On the First Division of this road, which is to run from Columbus, Ga., to a junction with the East Tennessee, Virginia & Georgia road in Henry County, a distance of 93 miles, work is now well advanced. The grading is completed for 40 miles and tracklaying was recently begun. The rails are now down for 6 miles from Columbus, and the work is progressing steadily.

On the Second Division, from the East Tennessee crossing to Athens, Ga., work has not yet been begun. The company has now two locomotives and a number of freight cars, and steel rails enough are on hand at Columbus to lay 20 miles of track.

Gulf, De Funik Springs & Northern.—This company has filed articles of incorporation in Florida to build a railroad in Walton County from Choctawhatchee Bay to De Funik Springs and thence in a northerly direction to the state line, a distance of about 50 miles. At De Funik Springs it will connect with the Pensacola & Atlantic road.

Hanover Junction, Hanover & Gettysburg.—As early noted last week, the stockholders of this company have approved the agreement of consolidation with the Bachman Valley Railroad Co., of Pennsylvania, and the Baltimore & Hanover Co. The Bachman Valley stockholders have also ratified the agreement and the Baltimore & Hanover stockholders will vote on it Oct. 2. The Hanover Junction, Hanover & Gettysburg has always controlled and operated the other lines.

The consolidated company, which is known as the Baltimore & Harrisburg, owns 67 miles of road directly and 12 miles more through ownership of stock. It is understood that the Western Maryland Co. now owns a controlling interest in the stock.

Indiana, Bloomington & Western.—In the matter of the application of the Cincinnati, Sandusky & Cleveland Co. for an order directing the Receiver of this road to pay rental for the leased road, the United States Circuit Court gave its decision in Cincinnati, Sept. 28. The decision to-day is the Court would not retain the leased road without complying with the requirements of the lease with respect to rents due, and the Receiver was ordered to pay to the Court 33 1/3 per cent. of the gross earnings on the basis of the Supreme Court decision, which includes 33 1/3 per cent. of the gross earnings of the division from Dayton to Springfield, and the Receiver was warned not to act as a partisan on pain of removal. The Receiver was also ordered to put the leased line in first-class condition, and if necessary to use the earnings of the Indiana, Bloomington & Western main line in doing so.

Indianapolis, Peru & Chicago.—In Indianapolis, Sept. 24, the United States Circuit Court ordered a final decree of foreclosure and sale to be entered against this road, and appointed Mr. W. P. Fishback Master to make the sale as soon as the required notice can be given. The Court fixed the minimum price as follows: For the Indianapolis, Peru & Chicago (Indianapolis to Peru, 75 miles), \$1,000,000; for the Chicago, Cincinnati & Louisville (Peru to Laporte, 73 miles), \$500,000; for the Michigan City & Indianapolis (Laporte to Michigan City, 13 miles), \$200,000. The road was for several years part of the Wabash system, but was taken from the company by the Court, on application of the bondholders.

Jacksonville Southeastern.—Arrangements are in progress for the extension of this road from its present terminus at Centralia, Ill., eastward to Mt. Vernon, where it will connect with the Louisville, Evansville & St. Louis road.

Kalamazoo, Hastings & Northern.—The stockholders of this company have accepted a proposition from some of them to take the road and build it from Kalamazoo, Mich., north to a connection with the Michigan & Ohio road, a distance of some 10 miles, and possibly on to a connection with the Chicago & Grand Trunk, some 30 miles. The right of way was secured some years ago.

Lakeside & Marblehead.—This company has been organized to build a railroad from a point on the Lake Shore & Michigan Southern road near Sandusky, O., to Marblehead Point on the north side of Sandusky Bay. The road projected is about 7 miles long. The capital stock is fixed at \$150,000, and the company has voted to issue \$110,000 in bonds.

Louisville & Nashville.—The Louisville *Courier Journal* of Sept. 20 says: "This company has begun the construction of another important feeder, in addition to the connecting link with the Richmond & Danville system. This road is, like the latter, a tributary of the Knoxville Branch, which is now almost as important as the main stem of the L. & N. It is not a prospective line, something which may be built, but work has been begun, and has been going on for several years. It starts at Woodbine, in Whitley County, and runs northeast along the valley of the Cumberland River to Pineville, in Bell County. It will be 30 miles long, and the section intersected abounds in coal mines, and is covered with dense forests of valuable timbers. It will pass through only two counties, Whitley and Bell, Pineville being the county seat of the latter."

"Bell County is almost a *terra incognita* to the average man, being visited only at rare intervals by an adventurous newspaper correspondent or mining speculators. It lies in extreme Southeastern Kentucky, just north of Whitley, and is one of the largest counties in the state, although its population is among the smallest. It is mountainous throughout its entire area, excepting the valley of the Cumberland and tributary streams, and abounds in rugged and romantic scenery. The timber interests are large, but owing to lack of transportation are but slightly developed. The coal interest, which is equally valuable, for the same reason has not been developed at all. Pineville, the terminus of the road, is a pretty mountain village of about 300 inhabitants, romantically situated on the Cumberland River, and is well known to the readers of the *Courier-Journal* because it is the home of Andy Johnson, one of the worst and most troublesome desperadoes in the mountains. Very few people in Bell County, except those who have been brought to Louisville to be tried for moonshining, have seen a railroad. Whitley, the other county intersected by the new road, has the Knoxville Branch running through its borders."

"Mr. Inman, of New York, a director of the L. & N., and one of the best known railroad men in the country, is a heavy owner of lands in Whitley and Bell counties, and he is the chief promoter of the enterprise. The road will be completed before many months, and should it prove as successful as the directors anticipate may be extended further into the mountains. The valley of the Cumberland River along which it runs, although narrow, is very fertile, and the coal and timber, with the product of the farms, will furnish a heavy traffic. This road will be the first to penetrate the extremely mountainous section of Kentucky."

Macon & Florida Air Line.—Mr. J. Lane, General Contractor, gives notice that he will receive bids for the grading, ties, trestles and piling of this road; bids to be made either for the whole work or in sections of 10 miles. Profiles and specifications for the first 50 miles can be seen at his office in Macon, Ga., after Oct. 1.

Memphis & Charleston.—The statement for July, the first month of the fiscal year, is as follows:

	1886	1885	Increase	P. c.
Earnings.....	\$55,464	\$33,816	\$11,647	33.9
Expenses.....	74,873	68,740	6,133	8.9

Net earnings..... \$20,510 \$15,076 \$5,514 36.8

The road shows a remarkable improvement. The earnings are still light, however, having been \$327 gross and \$71 net per mile in July of this year.

Mexican Railroad Notes.—The following notes are from the *Mexican Financier* of Sept. 18:

The concession granted in 1862 for a railway from Pérano to San Felipe, to connect with the Central Railroad, has been declared forfeited on account of non-construction.

The *Diario Comercial*, of Vera Cruz, devotes a leading article to the subject of railroad concessions, and criticizes the freedom with which they have been granted in the past, saying that 99 in 100 have been declared forfeited, and that to enable the hundredth to meet its agreements the terms of the original concessions have had to be modified. While there is some truth in this, it does not follow that railroad concession should not be granted, but rather that greater care should be exercised in giving charters, and this is the present policy of the Department of Public Works. It is much more difficult now to secure concessions than in the years of the "railroad boom." The *Diario Comercial* is of the opinion that a line between this capital and Túxpam cannot succeed, and says: "The line from Túxpam to Mexico means something more to the government than a subvention. It means the necessity of creating there a port which does not exist. And if for the works at our port there must be suspended during more than a year the funds appropriated to them because it has not been possible for the Treasury to furnish them, is it credible that it can, at the same time, attend to the creation of a new port at the point of departure of a new railway?"

Minnesota & Northwestern.—Tracklaying was recently begun on the eastern end of the Dubuque & Northwestern, the extension of this road to Dubuque, Ia. The rails are reported down to a point 17 miles northwest of Dubuque, and 9 miles beyond Durango, which place they reached several months ago.

Missouri Pacific.—A contract has been let to Carlisle Brothers, of Pueblo, Col., to build a branch from Weeping Water, Neb., to Nebraska City, about 20 miles.

On the new branch running from Greenville, Tex., on the eastern arm of the Missouri, Kansas & Texas Division southwest to Dallas on the Texas & Pacific, work is now progressing rapidly. The road is reported finished from Greenville southwest 16 miles.

Montreal, Portland & Boston.—A Montreal dispatch of Sept. 28 says: "The Court of Appeals has rendered judgment in the case of J. L. Morris, appellant, against the Connecticut & Passumpsic Rivers Co., respondent, reversing the decision of Justice Johnson in the Superior Court, given in favor of the railroad company two years ago. At that time 7,924 shares of the Montreal, Portland & Boston Railway were sold by the sheriff here at auction on a judgment obtained by Mr. O'Halloran, Q.C., against Mr. Barlow, President of the road, and were purchased by Mr. Morris. The Passumpsic Co. entered action in the Superior Court to set aside the sale on the ground that the stock should not have been sold *en bloc*. Justice Johnson annulled the sale, when Mr. Morris appealed from the judgment, which the full Appeal Court has reversed, declaring the sale to be good and laying it down that the sheriff could not do otherwise than sell under the warrant of the Court which he held. The company has given notice of an appeal to the Privy Council."

New Orleans & Gulf.—This company has been incorporated in Louisiana to build a railroad from a point of junction with the Shell Beach Railroad, at or near Poydras Landing, in the parish of St. Bernard, to a point at or near the Quarantine station, as now established on the Mississippi River, or such other point between Poydras Landing and the Quarantine station, or beyond it, as may hereafter be determined; and also to operate steamboats, tugs, barges, ferries, docks and elevators in connection with the railroad.

New York, Lake Erie & Western.—This company's statement for August and the eleven months of the fiscal year from Oct. 1 to Aug. 31 is as follows, the figures including 68 per cent. of the gross earnings and all the working expenses of the leased New York, Pennsylvania & Ohio road:

	August	1885	1885-86	1884-85
Earnings.....	\$9,016,693	\$1,737,458	\$20,260,171	\$17,098,508
Expenses.....	1,478,602	1,233,854	14,478,030	13,089,302

Net earnings..... \$573,093 \$503,604 \$5,782,121 \$4,009,606

For the eleven months the gross earnings increased \$3,161,263, or 18.5 per cent., and the expenses \$1,388,748, or 10.6 per cent., leaving a gain in net earnings of \$1,772,515, or 44.2 per cent.

The earnings of the Erie lines proper, excluding all earnings and expenses of the leased line, were:

	August	1885	1885-86	1884-85
Earnings.....	\$1,659,119	\$1,437,348	\$16,479,412	\$13,985,080
Expenses.....	1,101,421	909,390	10,790,960	9,775,100

Net earnings..... \$557,698 \$527,958 \$5,688,452 \$4,209,980

Here there was for the eleven months an increase in gross earnings of \$2,494,332, or 17.8 per cent., and an increase in expenses of \$1,015,860, or 10.4 per cent., leaving a gain in net earnings of \$1,478,472, or 35.1 per cent.

For the eleven months this year the Erie's proportion of the gross earnings of the New York, Pennsylvania & Ohio amounted to \$3,780,759, and its working expenses to \$3,687,090, showing a profit on the lease of \$93,669; against a loss of \$200,374 last year.

New York, New Haven & Hartford.—It is reported that the directors are considering the question of a general reduction of passenger fares on this road.

New York, Susquehanna & Western.—About 10 o'clock on the evening of Sept. 25, as a freight train on this road was passing over the bridge across the Passaic River at Dundee Lake, N. J., one span of the bridge went down, carrying with it six cars loaded with merchandise. The engineer saw that the bridge was giving way and opened the throttle wide, breaking a coupling and carrying the engine and tender forward into safety, while the rear cars remained on the bridge, stopping just the other side of the gap. The train was running slowly at the time.

The span which fell was 132 ft. in length and had been in use only a few weeks. It was of iron and had been put up in place of an old wooden span, the company having arranged some time since to replace the old bridge which had been in use since the road was first built. The iron was supplied by the Passaic Rolling Mill Co., of Paterson, N. J., but the span was erected by the company's bridge under charge of its Bridge Superintendent. That officer is considered a careful and competent man, and from all the facts ascertained so far, it does not appear that there was any fault in the material or in the erection. From the manner in which the span fell and the position of the wreck, it appears altogether probable that one

of the cars was derailed in some way, just as it was entering the bridge, and struck the end-post of the truss with sufficient force to move the span from its seat on the pier. It may be added that the guard-rails and timbers had not yet been put in place.

The fall of the bridge interrupted traffic for several days, freight business being stopped altogether and passengers transferred across the river. The material for a second span of the same length had been delivered to the company and this span was put up in place of the broken one as rapidly as possible.

The gross and net earnings for August and for eight months were as follows:

	August.	1886.	1885.	Eight months.
Earnings.....	\$94,846	\$101,353	\$696,475	\$689,165
Expenses.....	55,806	53,389	405,859	380,777
Net earnings.....	\$39,040	\$47,964	\$290,616	\$317,388

For the eight months the gross earnings decreased \$1,690, or 0.3 per cent., and the expenses increased \$25,082, or 9.6 per cent., the result being a decrease of \$26,772, or 8.5 per cent., in net earnings.

Norfolk & Western.—The statement for August and the eight months to Aug. 31 is as follows:

	August.	1886.	1885.	Eight months.
Passengers, etc.....	\$96,804	\$62,190	\$388,051	\$385,96
Freight.....	220,603	188,006	1,605,023	1,312,105
Total.....	\$287,407	\$250,196	\$1,993,074	\$1,697,701
Expenses.....	164,488	145,283	1,210,946	1,076,526

Net earnings..... \$122,919 \$104,913 \$782,128 \$21,175

Per cent. of exps..... 57 58 61 63

For the eight months the gross earnings increased \$295,373, or 17 per cent., and the expenses \$134,420, or 12 per cent., the result being a gain of \$160,953, or 26 per cent., in net earnings.

Northern Central.—The statement for August and the eight months to Aug. 31 is as follows:

	August.	1886.	1885.	Eight months.
Earnings.....	\$502,027	\$451,370	\$3,533,889	\$3,460,895
Expenses.....	303,296	270,886	2,314,020	2,126,142

Net earnings..... \$198,731 \$180,484 \$1,219,860 \$1,334,723

For the eight months the gross earnings increased \$73,024, or 2.1 per cent., and the expenses \$187,878, or 8.8 per cent., the result being a decrease of \$114,854, or 8.6 per cent., in net earnings.

Northern Pacific.—The report of Vice-President and General Manager Oakes, which was not included in the annual report from which an abstract was made last week, says:

The decrease of revenue from through freight was \$262,122, and the decrease in revenue from through passengers was \$107,166. The decrease in passenger pool and subsidy earnings was \$119,191. The decrease in San Francisco freight subsidy and pool earnings was \$340,531, and the decrease in through freight earnings \$262,122, being an aggregate decrease from these sources of \$829,010. Adding \$104,100 as the decrease in other items, the total decrease is \$933,111, which, subtracted from the increase of \$1,497,797, leaves a net increase from local business of \$564,686, which not only offsets the decrease in through freight and passenger earnings and the loss of the California subsidy, but is also sufficient to provide for increased fixed charges and leave a surplus of \$111,200 over and above all charges against income. An important point is that this source of income cannot be seriously affected in the future by the rivalry of other transcontinental lines, and that it must steadily grow with the development of the immense and comparatively new tributary territory.

The dissolution of the Transcontinental Association in February last and the subsequent cutting of through passenger and freight rates to the Pacific Coast points caused a heavy falling off in earnings from through business, and the situation was further aggravated by the unsatisfactory traffic relations with the Oregon Railway & Navigation Co., which took advantage of its command of two Eastern connections to insist that an undue share of the losses arising from the unremunerative rates should fall upon those lines; as in point when the rate from Chicago to the Pacific Coast fell to 65 cents per hundred, the Oregon Railway & Navigation demanded and obtained 28 cents per hundred for its haul of 213 miles from Wallula Junction to Portland, leaving the Northern Pacific only 28 cents per hundred for its haul of 1,699 miles from St. Paul to Wallula Junction. At the same time the Oregon Railway & Navigation exacted nearly twice its local first-class passenger fare out of the reduced through rates. The completion of the Cascade Division this year will give the Northern Pacific a line of its own to Portland by way of Tacoma, and will release it from a situation which makes possible such an unfair division of revenue.

The statement of the live stock transported during the last five years shows: 1882, 13,000 head cattle; 1883, 41,140; 1884, 77,320; 1885, 68,860; 1886, 47,500 head cattle and 32,200 sheep. Some grazing territory was lost on the south and north of the road by the competition of new roads, but portions of Minnesota and Dakota are now supplied with horses from Oregon and Washington, about 3,000 head having been shipped last year.

Ohio & Mississippi.—This company notifies holders of the Springfield Division bonds that the privilege granted of exchanging the outstanding Springfield Division bonds for the first general mortgage bonds of the company is withdrawn.

Ohio River.—Work is progressing rapidly on the extension of this road from Parkersburg, W. Va., to Point Pleasant. The tracklayers, who began work at the southern end, have now reached a point 24 miles north of Point Pleasant. The extension is 79 miles long in all, and the contractors expect to finish work by the end of the year.

Pennsylvania.—The statement of the business of all lines of this company east of Pittsburgh and Erie for August, 1886, as compared with the same month in 1885, shows an increase in gross earnings of \$629,085, an increase in expenses of \$373,051, and an increase in net earnings of \$256,033. The eight months of 1886 as compared with the same period of 1885 show an increase in gross earnings of \$3,231,228, an increase in expenses of \$1,404,851, and an increase in net earnings of \$1,826,377.

Carrying out these differences we have the following statement:

	August.	1886.	1885.	Eight months.
Earnings....	\$4,585,391	\$3,956,306	\$32,192,234	\$28,961,06
Expenses....	2,680,345	2,307,294	21,037,132	19,632,271

Net earn. \$1,905,046 \$1,649,012 \$11,155,102 \$9,328,735

P. c. of exps 58.5 58.3 65.3 67.8

All lines west of Pittsburgh and Erie for the eight months of 1886 show a deficiency in meeting all liabilities of \$344,206, being a decreased deficiency as compared with the same period of 1885 of \$810,053.

Peoria, Decatur & Evansville.—The gross and net earnings for July and seven months were as follows:

	July.	1886.	1885.	Seven months.
Earnings.....	\$73,343	\$53,799	\$41,710	\$382,288
Expenses.....	34,990	30,141	22,759	225,326
Net earnings.....	\$38,953	\$22,658	\$181,951	\$156,968

For the seven months the gross earnings increased \$28,422, or 7.4 per cent., and the expenses \$3,439, or 1.9 per cent., the result being a gain of \$24,983, or 15.9 per cent., in net earnings.

Philadelphia & Reading.—A Philadelphia dispatch of Sept. 24 says: "There is only one obstacle to the easy progress of the present Reading reorganization plans toward a consummation, and that is the obstructive attitude of the Barker Wharton-Kemble syndicate that holds the controlling interest in the consolidated 5 per cent. loan. In the event of foreclosure under the general mortgage, it is claimed for the consolidated fives that they would be entitled to assume the leases of both the North Pennsylvania and the Bound Brook roads, upon which their mortgage is regarded as a first lien. This claim, it is said, is disputed by eminent legal authority; but whether this is so or not, it is contended in behalf of the interests favorable to the existing plan of reorganization that without the present connections the North Pennsylvania and Bound Brook lines would be a nonentity so far as a direct line between New York and the business centre of Philadelphia is concerned. They have now the use of the Reading and Jersey Central terminals, for which they pay a merely nominal rental, if any at all.

"It is claimed that, should the Reading lose the North Pennsylvania, it could, by constructing one mile of new road from Tabor Junction on the North Pennsylvania Railroad, to which it has a direct line from Ninth and Green streets, to Crescentville, connect there directly with the Newtown Road, which is controlled by Reading. From Newtown, to which point the road is now operated, it is said a new parallel road to Bound Brook could easily be built in a short time, the distance between the two points being only 30 miles. This could be done and connection made with the Jersey Central near Bound Brook, at a total expenditure of \$1,643,000. As worked at present the North Pennsylvania Railroad is very profitable to the lessee, but should it fall into strange hands it is contended that the Reading could then divert to its own lines the heavy passenger traffic now carried to Ninth and Green streets on the North Pennsylvania from connections with the Lehigh Valley and Lehigh & Susquehanna railroads at Bethlehem and Allentown. The large anthracite tonnage now shipped to this city and elsewhere on the North Pennsylvania, if diverted to other channels, would also detract greatly from the earning power of that line."

The Receivers' statements give the earnings of the railroad for August and the nine months of the fiscal year from Dec. 1 to Aug. 31, as follows:

	August.	1886.	1885.	Nine months.
Earnings.....	\$2,808,268	\$2,940,749	\$21,584,781	\$20,608,306
Expenses.....	1,559,700	1,526,756	12,799,965	12,416,157

Net earnings \$1,248,562 \$1,413,093 \$8,784,816 \$8,192,209

For the nine months the gross earnings increased \$976,415, or 4.7 per cent., and the expenses \$383,808, or 3.1 per cent., leaving a gain of \$592,607, or 7.2 per cent., in gross earnings.

The traffic reported for the railroad lines is as follows:

	August.	1886.	1885.	Nine months.
Tons coal.....	1,180,686	1,266,675	9,125,681	8,017,948
Tons merchandise.....	956,258	781,104	7,806,174	5,928,890
Passenger.....	2,673,001	2,288,489	17,732,174	17,165,835
Tons coal on colliers ..	53,068	49,252	390,746	468,826

For the month there was a large increase on everything but coal; for the nine months the coal tonnage also shows a considerable gain.

The statement for the Philadelphia & Reading Coal & Iron Co. is as follows:

	August.	1886.	1885.	Nine months.
Earnings....	\$1,501,421	\$1,417,488	\$10,574,916	\$10,492,857
Expenses....	1,682,962	1,395,480	12,188,740	10,692,407
Deficit.....	\$181,541	*\$22,408	\$1,613,824	\$199,550

* Profit.

For the nine months the gross earnings increased \$82,059, or 0.8 per cent., and the expenses \$1,496,333, or 14.0 per cent., the result being an increase of \$1,414,274, or 70.8 per cent., in the deficit.

The coal mined from the company's lands was as follows:

	August.	1886.	1885.	Nine months.
By company	527,613	592,525	3,901,233	3,565,586
By tenants	50,588	77,648	433,670	557,360

Total..... 578,201 670,173 4,334,922 4,122,946

The total output shows for the month a decrease of 91,972 tons, or 13.7 per cent.; for the nine months, an increase of 211,976 tons, or 5.1 per cent.

The joint statement of net earnings of the two companies is as follows:

	August.	1886.	1885.	Nine months.
Railroad Co. net.....	\$1,248,562	\$1,413,093	\$8,784,816	\$8,192,209
Coal & Iron Co. defict.....	181,541	*\$22,408	1,613,824	199,550
Total net.....	\$1,067,021	\$1,436,401	\$7,170,092	\$7,992,659

* Profit.

The decrease in the net total for August was \$369,380, or 25.7 per cent.; for the nine months, \$821,667, or 10.3 per cent. As the expenses reported do not include any payments for interest or rentals, the net earnings given above are the sums from which all fixed charges are to be met.

The Philadelphia, Wilmington & Baltimore Co. has brought suit to terminate the lease of its Chester Branch to this company. This branch was originally the main line, and when a new line was built out of Philadelphia the old road was leased to the Reading on condition that it should be used for freight only and not as a competing line to the lessor company's road. It is now claimed that the Reading has violated the conditions of the lease by using the branch as a connection over which business is exchanged with the Baltimore & Ohio line.

Pittsboro.—Work is progressing steadily on this road. The grading is now nearly all completed and the track is laid for 8 miles. The road will probably be completed in October. It will extend from Moncure, N. C., on the Raleigh & Augusta Air Line, west to the old town of Pittsboro, a distance of 11 miles.

Pittsburgh, Painesville & Fairport.—Arrangements have been made to lease this road to the Pittsburgh & Western Co., and meetings will be held next week to ratify the lease. The road extends from Youngstown, O., to Fairport on Lake Erie, 62½ miles. It was formerly the Painesville & Youngstown, and was sold under foreclosure in June

last. The purchasers organized the present company and have changed the road from 3 ft. to standard gauge. The company owns water front and docks at Fairport, and the road is expected to do a considerable business in coal and iron ore to and from the lake.

Pittsburgh & Western.—This company's stockholders will vote Oct. 7 on the question of leasing the Pittsburgh, Painesville & Fairport road, formerly the Painesville & Youngstown. The lease will give this company a line to Lake Erie at Fairport and a share in the ore traffic from the lake to Pittsburgh.

Poughkeepsie Bridge.—The contract for the piers and substructure has been let to Dawson, Symmes & Ussher, a well-known contracting firm, and they have made a preliminary examination of the ground, with a view to beginning work as soon as possible.

Pullman's Palace Car Co.—Some indications of the facilities of this company can be gathered by its service over numerous railroad lines in conveying passengers to and from the almost numberless reunions, conclaves and conventions that have been held during the summer. During the past month alone 250 special cars have been concentrated at the principal points of the country. The company furnished 125 special cars for the reunion of the Republic at San Francisco and 53 cars for the excursion to Los Angeles. The annual meeting of the Sovereign Grand Lodge of Odd Fellows in Boston last week called for 55 cars, besides a large number for local points. The triennial conclave of Knights Templars at St. Louis called for 200 extra or chartered cars. The unusual demands

for the Marietta to be put into a physical condition equal to the Valley and construct the connecting link."

Wabash, St. Louis & Pacific.—In the United States Court at St. Louis, in the case of the Central Trust Co. and James Cheney, trustees, against this company, the Court ordered the plaintiff to deliver to the Purchasing Committee the three several deeds to the property purchased. It was also ordered that from any surplus in their hands arising from the operation of the property in their charge, over and above necessary operating expenses, the Receivers are authorized to pay coupons on bonds secured by mortgages superior in right to the mortgages foreclosed.

A committee of first-mortgage bondholders of the Wabash system east of the Mississippi, consisting of Messrs. Frederick N. Lawrence, Benjamin F. Romaine and Edward Oothout, have prepared an answer to the modified plan of the Purchasing Committee. In it they state that they consider themselves free to protect the interests of the first-mortgage bondholders to the fullest extent, and they decline to avail themselves of the authority given them by the bondholders who have already signed to accept 5 per cent. extended bonds. The committee of second-mortgage bondholders also append their concurrence in general terms to the propositions of the circular, contending that their coupons should be paid before any interest on securities junior to their own.

West Jersey.—This company's statement for August and the eight months to Aug. 31 is as follows:

	August.	Eight months.
Earnings.	1886. \$217,918	1885. \$212,639
Expenses.	104,591	93,013
Net earnings.	\$113,327	\$119,026
Interest, rentals, etc.	226,161	218,604
Surplus.	\$136,336	\$137,274

For the eight months there was an increase in gross earnings of \$50,477, or 5.6 per cent.; an increase in net earnings of \$6,619, or 1.9 per cent., and a decrease of \$938, or 0.7 per cent. in the surplus over fixed charges.

Western Maryland.—It is reported that this company has secured a controlling interest in the Baltimore & Harrisburg, the new company formed by the consolidation of the Hanover Junction, Hanover & Gettysburg and its leased lines.

West Penn & Shenango Connecting.—The trustees have begun proceedings to foreclose the first mortgage on this road. The line extends from Coalton Junction, Pa., to Butler, 19½ miles, and was built to give the Shenango & Allegheny road a connection with Pittsburgh.

West Virginia & Ohio.—This company has been incorporated to extend the New River Branch of the Norfolk & Western Railroad from Pocahontas, Va., to Charleston, W. Va.; the principal office to be at Bramwell, W. Va. The corporators are all Philadelphia parties.

ANNUAL REPORTS

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the *Railroad Gazette*:

Page.	
Alabama Great Southern.	123
Ala., N. O. & Tex. & Pac. June 30.	255
Allegheny Valley.	588
Alliance, Niles & Ash.	651
Americus, Preston & Lump.	492
Ashtabula & Pittsburg.	532
Athens, Top & Santa Fe.	292
Atlanta & West.	486
Atlanta & S. Carolina.	591
Atlantic & Pacific.	591
B. & O. Employees' Relief As'tn.	345
Baltimore & Philadelphia.	15
Bay View, L. Trav. & Mackin.	632
Boston & Lowell.	15
Boston & Maine.	23
Brownsville & Ohio.	16
Buffalo, N. Y., & Philadelphia.	16
Bur. Cedar Rapids & No.	622
Cairo, Vincennes & Chicago.	506
Camden & Atlantic.	516
Canadian Govt Railroads.	272
Canadian Pacific.	363
Central Central.	363
Central Pacific.	469
Charlottesville, Col. & Augusta.	155
Charter.	394
Chesapeake & Dela. Canal.	414
Chesapeake & Ohio.	240
Cheshire.	104
Colonial & Alton.	156
Chi. Burlington & Quincy.	292
Chi. & Grand Trunk.	324
Chi. Milwaukee & St. P.	208
Chi. & Northwestern.	414
Chi. Rock Island & Pac.	383
Chi. St. P. & Pacific.	234
Chi. St. P. & P. & St. Louis.	404
Chi. & Western Indiana.	485
Chi. & West Michigan.	595
Cin. & Eastern.	639
Cin., Hamilton & Dayton.	485
Cin., Ind., St. L. & Chi.	558
Cin. & Muskingum Valley.	394
Cin. & Northern Pacific.	552
Cin. & St. Louis & Memphis.	394
Cin. & Richmond & Ft. Wayne.	652
Cin. & Springfield.	208
Cin., Wa.-Baltimore.	518
Cleveland & Canton.	192
Clev., Col. & Ind.	208
Clev., Coal & Wheeling.	652
Clev., Youngstown & Pitts.	174
Columbia & Greenville.	174
Col., Hocking V'y. & Tol.	102
Concord.	367
Connecticut River.	85
Constitution Coal Co.	139
Cumberland Valley.	226
Del. & Hudson Canal Co.	256
Del., Lacka. & Western.	104
Denver & Rio Grande.	139
Denver Rio Gr. Western.	591
Des Moines & Fort Dodge.	291
Des Moines & Pacific.	291
Detroit, Gd. Huron & E.	324
Dublin & Wrights'lie.	255
Fremont, Elkhorn & Mo. V.	555
Galveston, Houston & Hen.	307
Georgia Pacific.	272
Grand Rapids & Indiana.	652
Grand Trunk.	324
Guad. Colorado & Santa Fe.	452
Hanover, June, Han. & Gettys.	114
Housatonic & Mich.	192
Houston & Texas Central.	272
Huntingdon & Broad Top Mt.	120
Illinois Central.	174
Indianapolis & St. Louis.	208
International & Gt. No.	352
Iron.	493
Jeff., Madison & Indianapolis.	652
Kans. City, Ft. Scott & Gulf.	456
Kans. City, Springfield & Mem.	485
Kansas City Union Depot Co.	250
Lake Shore & Mich. So. 33, 323, 314	622
Lawrence.	192
Lehigh Coal & Navigation Co.	140
Lehigh Valley.	624
Leh. & Wilkes-Barre Coal Co.	139
Little Miami.	394
Little dock & Ft. Smith.	595
Louisville & Nashville.	595

St. Paul, Minneapolis & Manitoba.

The mileage owned and operated by this company at the close of its last fiscal year, June 30, 1886, was as follows:

Miles.

St. Paul, Minn., to Manitoba boundary.

.....

909.98

Minneapolis Junction to Breckenridge.

.....

205.05

Breckenridge Junction to boundary.

.....

207.57

Branches.

.....

697.85

.....

1,509.45

Total.

.....

1,509.45

There are 28.45 miles of second track and 219.49 miles of sidings. Of the total mileage of track 1,088.20 miles are laid with steel. Of the mileage of main line 998.32 miles are in Minnesota and 511.18 miles in Dakota.

During the year were lines from St. Cloud Junction, Minn., to two miles west of Richmond, 20 miles, and from Devil's Lake, Dak., to Church's Ferry, 18.87 miles. Neither of these lines were opened for traffic until the close of the year.

The equipment consists of 201 locomotives; 84 passenger, 19 sleeping, 18 combination, 44 baggage, mail and express cars; 3,408 box, 50 stock, 1,300 flat and coal and 110 caboose cars; 3 business and pay cars, 9 derrick and tool and 34 dump cars, 2 steam shovels and 1 pile-driver.

The general account, condensed, is as follows:

Stock.

.....

\$20,000,000

Funded debt.

.....

33,336,000

Sinking funds.

.....

423,641

Accounts and balances.

.....

1,957,315

Fund for improvement and renewals.

.....

689,060

Profit and loss, balance.

.....

2,117,298

Total.

.....

\$57,523,914

Road, equipment and lands.

.....

\$54,880,398

Stocks owned.

.....

892,789

Other property and security.

.....

2,450,008

Bonds held for reserve fund.

.....

931,400

Materials.

.....

277,301

Accounts and balances.

.....

209,633

Cash.

.....

632,365

Total.

.....

\$60,273,914

Less land grant bonds redeemed.

.....

2,750,000

Total.

.....

\$57,523,914

The funded debt includes \$5,250,000 land grant firsts; \$8,000,000 seconds; \$366,000 old St. Paul & Pacific bonds; \$5,876,000 Dakota Extension and \$13,044,000 consols. The only change during the year was the redemption of \$100,000 firsts.

Land sales for the year were 68,560 acres (at an average of \$5.30 per acre) and 224 town lots, the total sales amounting to \$376,323. Cash receipts were \$505,352 and expenses \$155,238, leaving a balance of \$850,114, transferred to sinking fund. The company holds 2,727,224 acres unsold, and also land notes amounting to \$497,740 principal and \$13,981 interest.

The report says: "Reports from the government land offices at Crookston, Minn., and Grand Forks and Devil's Lake, Dak., show an aggregate of 5,227 pre-emption, homestead and timber culture entries made in those districts during the past year, representing an area of 795,888 acres.

"By the completion of the branch line extending from St. Cloud to Richmond, this company has acquired the right to select 50,000 acres of swamp lands, making its total swamp-land grant, through proprietary companies, 475,664 acres."

The earnings for the year were as follows:

Freight. 1885-86. 1884-85. Inc. or Dec. P. c.

Passenger. 1,473,741. 1,395,797 I. 77,615 5.6

Mail and express. 204,617. 221,479 D. 16,862 7.6

Miscellaneous. 56,423. 145,838 D. 89,415 61.2

Total. \$7,321,736 \$7,776,164 D. \$454,428 5.8

Expenses. 3,838,652 3,509,927 I. 328,725 9.3

Net earnings. \$3,483,084 \$4,266,237 D. \$783,153 18.4

Gross earn. per mile. 4,978 5,330 D. 352 6.6

Per cent. of exps. 52.4 45.1 I. 7.3 ...

Expenses include taxes, which last year amounted to \$180,248, or 2.6 per cent. of gross earnings.

The expenses were divided as follows:

Conducting transportation. 1885-86. 1884-85. Amount. Pr. ct. Amount. Pr. ct.

Freight. 508,053 8.4 \$69,909 8.9

Maint'nce road and str't res. 1,476,709 20.1 956,600 12.3

Maint'nce of cars. 343,983 4.7 342,488 4.8

General expenses. 261,779 3.5 216,370 2.8

Taxes. 180,248 2.6 191,208 2.5

Total. \$3,838,652 52.4 \$3,509,927 45.1

There were last year 63,18 miles of track relaid with steel and 229,291 new ties used; 17,60 miles of new sidings were built. The work of reducing grades has been continued. New stations have been added at several points. No new equipment was added, but 500 box cars have been ordered, to be delivered this fall.

The result of the year was as follows:

Net earnings, as above. \$3,483,084

Interest paid and accrued. \$1,999,820

Dividends, 6 per cent. 1,200,000

3,199,820

Balance, surplus for the year. \$283,264

This does not include the net revenue from the sale of lands, which goes into the sinking fund.

The following new lines are now being graded, and on most of them track will be laid this autumn: Elk River to Milaca, 32; Richmond to Willmar, 98; Benson southwesterly; Campbell westerly; Crookston, southeasterly; Devil's Lake toward the Missouri River; Cando Branch, 16; Bottineau Branch, 38 miles. The Cando Branch leaves the Missouri River Extension at Church's Ferry, 19 miles west of Devil's Lake, and the Bottineau Branch leaves from Rugby Junction, 57 miles west of Devil's Lake. The line to Rugby Junction has been opened since the close of the year,